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I. *A Monograph of British* Braconidæ. Part VIII.

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Plate I.

(Continued from Trans. Ent. Soc. Lond. 1897, p. 31.)

VIII. CŒLINIUS, Nees.

Nees, Act. Ac. L.C., 1819, p. 301.

Originally synonymous with genus IX. *Chænon,* the two forming a natural group. Their artificial separation is due to Förster, who retained the name *Chænon* for the largest species: see the following genus, under which the chief characters are detailed. Some slight peculiarities are distinctive of *Cœlinius,* viz.:—head not so prominent beneath the antennæ; face punctate or rugulose, its carina shortened or wanting; clypeus more perceptibly discrete, and more prominent; palpi shorter, 3rd and 4th joints of the maxillary nearly equal; mandibles bidenticulate; antennæ with a smaller number of articulations; mesosternum flattened, its medial furrow rugose, not reaching the 2nd pair of coxæ; carina of the metathorax single or obsolete. Radial nervure forming a regular curve, not sinuated, originating beyond the middle of the stigma. Hind coxæ not so much compressed, rugulose at the base. First abdominal segment more than twice as long as the hind coxæ, punctate-rugose, more or less emarginate at the extremity; 2nd segment smooth at the base, or scarcely striolate; abdomen ♀ not so strongly compressed; 4th and following segments very short. Size of the species much inferior to that of *Chænon.*

The insects are parasitic on the small acalypterous *Muscidæ* of such genera as *Chlorops, Hydrellia,* etc. Of the six British species *niger* is abundant everywhere, *viduus, gracilis,* and *elegans* are less common; *podagricus* is doubtful, perhaps an accidentally deformed *viduus*; *procerus* is rare.

TABLE OF SPECIES.

(2)	1. Mesothoracic furrows faintly traced, converging to a point near the middle of the disc, thence continued in an indistinct line to the base of the scutellum	1. *viduus*, Curtis.
(1)	2. Mesothoracic furrows more distinct, punctate, converging into a rather deep fovea before the scutellum ...	3
(4)	3. Legs of normal length	5
(3)	4. Legs very short, the hind pair hardly longer than the abdomen; hind femora incrassated, not longer than the trochanters	2. *podagricus*, Hal.
(6)	5. Abdomen entirely black, or at most somewhat piceous at the base of the 2nd segment	3. *niger*, Nees.
(5)	6. Abdomen more or less rufous, testaceous, or yellowish in the middle ...	7
(8)	7. Prothorax red	4. *procerus*, Hal.
(7)	8. Prothorax black	9
(10)	9. Length 2½–3 lines; antennæ 36-jointed in the ♀, 54-jointed in the ♂	5. *gracilis*, Hal.
(9)	10. Length 1½–2½ lines; antennæ 30–32-jointed in the ♀, 40–45-jointed in the ♂	6. *elegans*, Hal.

1. *Cœlinius viduus*, Curtis.

Chænon viduus, ater, and *obscurus*, Curt., B. E., 289.
Alysia (*C.*) *vidua*, Hal., Hym. Brit., ii, 22, ♂ ♀.
C. viduus, Marsh., Species des Hym. d'Eur. et d'Alg. Bracon., ii, p. 515, ♂ ♀.

♀ Black, pubescent. Head rather longer than broad; posterior margin of the vertex nearly straight; front bearing an impression on each side above the antennæ, and in the middle, a small carina;

mandibles rufescent; palpi testaceous, fuscous at the tips. Antennæ longer than the head and thorax, stout, rufescent beneath at the base, 29–32-jointed. Mesonotum punctulate, its furrows subobsolete, converging about the middle of the disc, and prolonged in a faint linear fovea to the base of the scutellum. Wings dusky hyaline; squamulæ fuscescent; nervures and stigma dark fuscous, the latter narrow. Fore legs rufous, sometimes dark at the base; 4 posterior legs black, with piceous tibiæ and tarsi; extremities of the trochanters reddish, as well as the base of the tibiæ and of the tarsi. Abdomen compressed, carinated both above and beneath; 1st segment elongate, striolate, emarginate at the apex. Terebra very short, somewhat elevated. ♂ Antennæ slender, as long as the body, 42–47-jointed, the 2nd and 3rd joints equal, the 2nd piceous; stigma and radial areolet narrower than in the ♀; abdomen depressed, sublinear. Length, 1¾ lines.

VAR. ♀ *Chænon obscurus*, Curt. Antennæ rufescent at the base for some distance; legs testaceous; middle femora streaked with blackish above; hind coxæ and femora blackish, as well as the base of the trochanters; middle of the abdomen rufescent.

Not uncommon in Ireland, in sandy places, according to Haliday; taken in England by Walker, Rudd, and several times by myself.

2. *Cœlinius podagricus*, Haliday.

Alysia (*C.*) *podagrica*, Hal., *l. c.*, ♂.
C. podagricus, Marsh., *lib. cit.*, p. 516, ♂.

♂ Similar to *viduus*, but less elongate. Mandibles rufescent; palpi short, testaceous. Wings narrow; radial areolet and stigma more attenuated. Legs very short, the hind pair scarcely exceeding the abdomen; femora almost oval, incrassated, not longer than the trochanters; legs black, the first pair and the base of all the tibiæ rufescent. ♀ Unknown. Length, 2½ lines.

Not seen since the time of Haliday, who captured one ♂ at the end of July on a sandy shore near Dublin.

3. *Cœlinius niger*, Nees.

Stephanus niger, Nees, Mag. Ges. Berl., 1811, p. 5.
C. niger, Nees, Mon. i, 10; Curtis, in Morton's Cyclop. of Agricult., *s. v. Chlorops*, pl. clv, ff. 7, 8; Farm Ins., 242, pl. xxxiv, f. 8, and pl. H. frontisp. f. 16; Marsh., *lib. cit.*, p. 517, ♂ ♀.
Alysia (*C.*) *nigra*, Hal., *lib. cit.*, 24, ♂ ♀.

Chænon affinis, Curt., B. E., 289.
Chænon nigricans, Westw., Loud. Mag. 1835, p. 177, pl. xvi, ff. g, h.
Alysia Olivierii, Guér., Mém. Soc. Agric. 1842, p. 26, pl. iv, ff. 1, 2.

♀ Black, pubescent. Palpi and 4 anterior legs testaceous or ferruginous, sometimes more or less blackened ; abdomen entirely black, or at most slightly reddish at the base of the 2nd segment. Head short for the genus, subcubic, transverse, sloping and emarginate behind ; front slightly impressed ; mandibles rufescent ; labial palpi short, attenuated at the tips. Antennæ more slender than in other females of the genus, as long as the body, rufescent at the base, 35–40-jointed. Mesothoracic furrows converging to a foveola before the scutellum, from which emanates a short medial channel between two furrows ; metathorax coarsely punctate, rugose. Wings hyaline with a dusky tinge; squamulæ fuscous, nervures and stigma dark fuscous, the latter broader than usual, like the radial areolet, which is lanceolate, forming almost a half-oval. Fore legs testaceous, with the coxæ and base of the trochanters black ; femora streaked with blackish above ; 4 posterior legs black, the tibiæ and tarsi somewhat piceous ; tips of the trochanters and base of the tibiæ rufescent. Abdomen compressed towards the apex only ; 1st segment coarsely punctate, shorter than in the other species, hardly emarginate at the extremity. Terebra very short, or concealed. ♂ Antennæ entirely black, longer than the body, 44–47-jointed ; abdomen longer than the head and thorax, depressed, spathuliform. Length, 1¼–2½ lines ; exp. 2–4 lines.

This is the commonest species, occurring everywhere in cornfields and hedges. Goureau has reared it from the dipterous *Chlorops læta*, Meig., *C. herpini*, Guér., *C. lineata*, Meig. etc., and Westwood found it in spoiled ears of barley, which had been infested by some other of the 60 or 70 known species of *Chlorops*. Curtis, in the works above referred to, may be consulted for additional information.

4. *Cœlinius procerus*, Haliday.

Alysia (*C.*) *procera*, Hal., *lib. cit.*, 23, ♀.
C. procerus, Marsh., *lib. cit.*, p. 519, ♀.
C. ruficollis, H. Sch. Fortsetz. v. Paüzer, 154. 22. ♀.

♀ Black, with rufous prothorax. Similar to the following species, but larger. Palpi testaceous ; mandibles rufescent. Antennæ testaceous at the base, with more than 41 joints (mutilated). Wings hyaline with a glaucous tinge, infumated in the middle and in the cubital region; squamulæ testaceous; nervures and stigma fuscous. Legs testaceous; 2nd pair of femora with a dark spot in the middle; hind coxæ and femora fuscescent, as well as their tibiæ and the tips of their tarsi; hind femora testaceous at the extreme base. Second abdominal segment testaceous, blackish at both ends. ♂ Unknown. Length, 3½ lines.

Taken once in England by Haliday; unknown to me; otherwise noticed as captured in Holland and Germany.

5. *Cœlinius gracilis*, Haliday.

Alysia (*C.*) *gracilis*, Hal., *lib. cit.*, 23, ♂ ♀.
Chænon gracilis, Curt., B. E., 289.
C. gracilis, Marsh., *lib. cit.*, p. 519, ♂ ♀.

♀ Black, pubescent, with the middle of the abdomen ferruginous. Head subcubic, as broad as long, hardly emarginate posteriorly, wider than the thorax; mandibles and palpi ferruginous. Antennæ shorter than the body, stout, submoniliform, broadly rufous towards the base, 36-jointed. Wings largely infumated in the middle; stigma and nervures of the characteristic region fuscous; base and extremity of the wings whitish, with yellowish nervures; the fuscescent patch generally extends across the cubital areolets to the tip of the wing, the radial and posterior areolets remaining pale; sometimes however the wings are hardly at all clouded. Legs ferruginous; femora of the 2nd pair in great part blackish; hind coxæ and femora, together with the tips of the tibiæ, blackish, as also are the extremities of all the tarsi. Abdomen claviform, slightly compressed; 2nd segment ferruginous, bright testaceous, or yellow, blackish at the apex; all the following segments blackish. Terebra almost concealed. ♂ Antennæ slender, longer than the body, black, with the base piceous, 54-jointed; wings infumated, hyaline at the base and in the radial areolet; squamulæ piceous; legs darker than those of the ♀, having also the intermediate coxæ and the hind tarsi blackish; abdomen very elongate; 1st segment black; 2nd and 3rd (taken together) obscurely ferruginous, darker at the base and apex; 4th and 5th blackish, or the base of the 4th ferruginous; the following segments blackish. ♀ Length, 2½; exp. 3¾ lines; ♂ length, 3; exp. 4½ lines.

VAR. ♂ Abdomen black, with only a rufous band across the 2nd segment.

The ♀ may be distinguished from that of the following species by the clearness of its tints, the greater size, and more elongated form, especially as regards the head and the basal segment of the abdomen: but the differences are less marked in the other sex.

Found very rarely in N. Ireland, according to Haliday: more common in England, where I have taken 4 ♀s and 3 ♂s.

6. *Cœlinius elegans*, Haliday.

Alysia (*C.*) *elegans*, Hal., *lib. cit.*, 23, ♂ ♀.
Chænon elegans, *cingulatus*, *similis*, *rufonotatus*, and *brevicornis*, Curt., B. E., 289.
C. elegans, Marsh., *lib. cit.*, p. 520, ♂ ♀.

♀ Black, with the middle of the abdomen ferruginous. Head transverse, as wide as the thorax, or nearly so. Antennæ stout, longer than the head and thorax, submoniliform, 30–32-jointed, blackish, ferruginous at the base and sometimes as far as the middle; the articulations subquadrate. Wings slightly infumated, subhyaline towards the base; squamulæ brownish; stigma and nervures fuscous or fusco-ferruginous. Fore legs testaceous; intermediate coxæ, and greater part of the femora of the same pair, blackish, as well as the tips of all the tarsi; hind legs blackish, with the trochanters, the tibiæ nearly to the apex, and the base of the tarsi, ferruginous; the extent of the dark colour is liable to vary. First abdominal segment shorter than in the preceding species; segments 2–3 rufous or dull testaceous, the rest black. Terebra almost concealed. ♂ Antennæ rather longer than the body, slender, black, 40–45-jointed; middle of the abdomen very obscurely ferruginous or piceous. Length, $1\frac{1}{2}$–$2\frac{1}{2}$ lines; exp. $2\frac{1}{4}$–$3\frac{3}{4}$ lines.

Var. ♂ Black; mandibles rufescent; palpi ferruginous; base of the antennæ beneath, middle of the abdomen, and legs, rufous; 4 posterior coxæ, and sometimes the upper edge of the hind femora, blackish. Length, $2\frac{1}{2}$ lines (Haliday). The author adds that having no ♀ of this var. he did not venture to set apart the ♂s as a distinct species. In fact they do not appear to differ, except in coloration.

A common species in Great Britain and Ireland.

IX. CHÆNON, Curtis.

Curt., B. E., 289 (1829).

Form elongate, sublinear. Maxillary palpi unusually long, with 6 joints; of which the 3rd is shorter and stouter than the 3 following; labial palpi 4-jointed. Head longer than broad, much prolonged.

behind the eyes, depressed, not wider than the thorax ; occiput deeply excavated ; vertex slightly emarginate posteriorly, traversed by a fine medial furrow ; a deep fovea at the base of the antennæ ; face horizontal, carinated in the middle ; clypeus discrete ; mandibles 4-denticulate, the 3rd denticle elongate, acute. Antennæ setiform, multiarticulate, shorter than the body in the ♀, very elongate in the ♂. Prothorax deeply sunk between the head and the mesothorax, transversely wrinkled ; mesonotum punctate, with inchoate furrows ; an oblong foveola before the scutellum ; furrow of the mesopleuræ rugose, metathorax rugose, reticulate, with two irregular longitudinal carinæ. Stigma elongate-oval, lanceolate, emitting the radial nervure near the middle ; radial areolet like that of *Dacnusa*, semi-oval, attenuated and slightly sinuate before the extremity, which is remote from the tip of the wing. Hind pair of legs robust, elongate. Abdomen twice as long as the head and thorax ; 1st segment in the ♀ slender, sublinear, finely striolate ; 2nd and following segments strongly compressed, like the blade of an oar ; hypopygium somewhat prominent, shewing the blunt extremity of the terebra ; in the ♂ the 2nd and following segments are depressed, forming an elongate club.

Curtis in 1829 published an excellent figure of *C. anceps* ♀, with indications of eleven other British species : he was not aware that the same genus had been described in 1818 by Nees v. Esenbeck, under the name *Cœlinius.* The latter author in his Monograph described two species of *Cœlinius,* of which the first, *parvulus,* is a synonym of *anceps,* but he was not acquainted with the ♀, and described two ♂s as ♂ ♀ ; the second ♂, from Vienna, belongs to an uncertain species. These defects render it advisable, in spite of priority, to prefer the more characteristic name *anceps,* and to avoid the absurdity of calling the largest species *parvulus.* Haliday in 1839 suppressed *Chænon,* and assembled all the cognate species under the name *Cœlinius.* Förster has utilised both names, attributing to *Chænon* the large typical species, and all the others to *Cœlinius.* Schiödte and Zetterstedt have contributed to increase the number of synonyms.

Chænon anceps, Curtis.

Stephanus parvulus, Nees, Mag. Ges. Berl. 1811, p. 4, ♂ (not of H. Sch.)
Cœlinius parvulus, Nees, Mon. i, 9, ♂.
C. anceps, Curtis, B. E., pl. cclxxxix, ♂ ♀ ; Marsh., *lib. cit.,* p. 513, ♂ ♀.

Alysia (*Cœlinius*) *anceps*, Hal., *lib. cit.*, 20, ♂ ♀.
? *Ichneumon cultriformis*, Latr., Hist. Nat. Cr. et Ins., iii (1802).
Cœlinius flexuosus, H. Sch. Fortsetz. v. Panzer, 156. 13.

♀ Black; abdomen rufous, black at the base. Face clothed with whitish pubescence; mandibles piceous; clypeus and palpi testaceous; antennæ pubescent, shorter than the body, 50–55-jointed, the 2nd, or more joints, brownish testaceous. Mesosternum beset with whitish hairs. Wings slightly infumated; squamulæ rufous; stigma and nervures fuscous; hind wings proportionately broader than in *Cœlinius*. Legs rufous, hind tibiæ and tarsi black, as well as the tips of the hind femora and of the 4 anterior tarsi; hind tibiæ sometimes rufous at the base; hind coxæ somewhat compressed, punctulate, often fuscescent, scarcely shorter than the 1st abdominal segment. This latter, and the base of the 2nd segment, black, the 2nd striolate at the extreme base; 3rd and following rufous with a black streak on the dorsal ridge; hypopygium and valves of the terebra black. ♂ Antennæ longer than the body, 60–67 jointed; posterior segments infuscated, or at least cinctured with fuscous. Length, 2½–3½; exp. 3⅓–4⅔ lines.

Var. ♂ Palpi and squamulæ fuscous; intermediate coxæ blackish at the base; middle of femora and tips of tibiæ and of tarsi in the same pair blackish; hind legs blackish with the trochanters and the extreme base of the femora rufous; abdomen black above, rufous in the middle. Haliday.

The white cocoon of *C. anceps* was found by Nees attached to a dead larva unknown. If this remark of Nees refers to the present species, the larva in question must have been dipterous: but there is nothing to shew that the ♂ intended was not the second specimen sent by Dahl from Vienna, which could not have been *C. anceps*. This species is not very common, but occurs occasionally in marshy places throughout Great Britain and Ireland, also in Sweden, Lapland, and France. I have found the ♂ in Devonshire, singly, and once captured several of both sexes in a watery meadow on the banks of the Dee near Braemar.

X. POLEMON, Giraud.

Giraud, Verh. der zool.-bot. Ges. in Wien, 1863, p. 17, *sqq*.

This genus, now first introduced into the British Fauna, has many of the characters of *Cœlinius* and *Chænon*, but differs in the important structure of the abdomen. Form elongate, subcylindric. Head subcubic; vertex almost plane; front depressed; occiput deeply excavated, not margined; clypeus broad, transverse, elevated, separated from the face by a deep suture; mandibles quadridentate, one of the median teeth being the largest: maxillary palpi 6–, labial 4–jointed, one half shorter than the maxillary; eyes glabrous. Antennæ ♀ shorter than the body, those of the ♂ rather longer, multiarticulate. Prothorax very short; mesothorax and scutellum finely but sparingly punctulate; mesothoracic furrows wide and deep, converging to a broad fovea before the scutellum; furrow of the mesopleuræ broad, crenulate, united anteriorly to a second furrow, obliquely placed near the insertion of the wings; metathorax rugose, irregularly and often indistinctly canaliculate in the middle longitudinally. Stigma lanceolate, emitting the radial nervure somewhat beyond the middle; radial areolet lanceolate, remote from the tip of the wing; radial nervure faintly sinuated before the extremity; recurrent nervure distinctly rejected. Abdomen sessile, depressed, as long as the rest of the body, or longer, striolate from the base to beyond the middle of the 3rd segment, moderately compressed at the apex in the ♀; 1st segment nearly as wide as the metathorax, very little contracted at the base; 2nd suture well marked. Terebra hardly exserted. Description slightly abridged from Giraud.

Only two species of *Polemon* are known, *P. liparæ* and *P. melas*, Giraud, the second of which is suspected of being a melanic variety of the first. A third species has been described by Van Vollenhoven as *P. albimanus*; this however has not the sessile abdomen and striolate segments of *Polemon*, and manifestly belongs to *Cœlinius.*

Polemon liparæ, Giraud.

P. liparæ, Giraud, *lib. cit.*, p. 18; Marsh., *lib. cit.*, p. 524, ♂ ♀, pl. xvi, f. 6, ♀.

♀ Black; middle of the abdomen rufous. Head pubescent, rather wider than the thorax, punctate on the face, and sides of the vertex, more vaguely above; clypeus very short, more or less sinuate on the anterior margin; palpi testaceous, the two first joints of the maxillary smaller than the rest, the 3rd stoutest, the following elongate, nearly equal. Antennæ about 55-jointed. Thorax pubescent; mesonotum and scutellum rather shining, finely and sparingly punctulate. Wings more or less infumated or tinged with rufous; squamulæ and stigma black; nervures fuscous or fusco-rufescent, lighter towards the base; 2nd discoïdal areolet completely closed. Legs rufous; hind tarsi and tips of tibiæ of the same pair blackish. Abdomen depressed for the greater part of its length, slightly compressed near the apex, sessile; 1st segment one half longer than broad, hardly contracted at the base, faintly margined, covered with rugosities which become longitudinal posteriorly, and surmounted by a medial carina which is effaced before the hind margin; this segment is rufous more or less at the apex; segments 2–3 are also rufous; 4 rufous with the hind margin black, or black with the base rufous, or even entirely black; the longitudinal striæ extend as far as the middle or two thirds of the 3rd segment, the margin of which, and the whole of the following segments are smooth, and very vaguely punctulate; the ventral surface is of the same colour as the dorsal, but the red extends over the first segment; a distinct fold runs throughout the ventral surface; the terebra issues from the anal extremity, and not from a ventral fissure. ♂ Similar; antennæ longer, with 65–68 joints; abdomen not compressed at the apex, and shewing one more segment than that of the ♀; apical segments black. Length, 3½; exp. 6¼ lines.

VAR. ♀ First abdominal segment entirely rufous.

Parasite of the diptera *Lipara lucens*, Meig., *L. tomentosa*, Macq., and *L. similis*, Schiner, all three of which are abundant in the islands and on the banks of the Danube, near Vienna, forming galls on *Phragmites communis.* The size of *P. liparæ* varies naturally as that of its victim, the specimens proceeding from *L. lucens* being the largest. The cocoon is of a deeper rufous than that of the flies, more strongly compacted and more narrowly cylindric; the parasite, in order to escape, perforates the culm of the reed near the top. The species of *Lipara* are rare in Britain, and hence the presence of this parasite was not suspected until, by the kindness of Mr. Bignell, I was shewn the unique specimen in Mr. Dale's cabinet, ticketed as having been bred from *L. lucens. P. liparæ* is also recorded by Van Vollenhoven as taken in Holland.

VI. FLEXILIVENTRES.

APHIDIIDES.

Head usually transverse, contracted posteriorly, articulated to the lower part of the anterior face of the thorax; occiput margined, at least in part, (except in the genus *Dyscritus*), narrow, abruptly truncate; mandibles bidenticulate, cuneiform, narrow, hardly curved; palpi short, the maxillary not so long as the head, 2–4-jointed; labial palpi 1–3-jointed; clypeus subtriangular. Antennæ filiform or submoniliform, 11–25–27–jointed, shorter than the body in the ♀s, longer in the ♂s. Prothorax short; mesothorax gibbous; furrows of the mesonotum generally effaced, but distinct in *Praon* and some species of *Aphidius*; metathorax short, sloping from its base, usually areolated. First discoïdal areolet of the fore wings contiguous to the parastigma; the rest of the neuration is either tolerably complete, with 3 cubital areolets (*Ephedrus, Toxares*), or incomplete (*Praon, Aphidius, Monoctonus, Dyscritus*), having but 2 cubital areolets, often only 1, and sometimes none; in these latter cases the radial and cubital nervures are abruptly effaced before running half their course, and the exterior third of the wing is deprived of nervures: intercubital nervures effaced; 1st cubital areolet confounded with the 1st discoïdal (in *Praon* the separation exists imperfectly); anal nervure interstitial (except in *Dyscritus*), but feebly expressed or obsolete; the inferior wings have only two longitudinal nervures, indicating a costal areolet which is open at the extremity; the ♀ of one species of *Aphidius* is entirely apterous, the corresponding ♂ is unknown. Legs of ordinary form. Abdomen subpetiolate or subsessile, longer than the head and thorax, exhibiting 7 segments above, and 6 beneath; the 3 first segments are loosely articulated, so that the abdomen curves easily forwards under the thorax, an attitude necessary for oviposition, originally belonging to the larva when curled up within the globular body of an Aphis, and which the perfect insect shews a tendency to assume occasionally throughout life; 2nd suture replaced by an extensible membrane; hypopygium slightly projecting beyond the apical dorsal segment of the ♀, forming a support to the terebra; this last briefly exserted, its valves broad, compressed, of variable form.

The parasitic habits of these insects, differing from those of the majority of the Braconidæ, have been known ever since the year 1695, the date of the "Arcana Naturæ" of Van Leeuwenhœk, who first observed them attacking Aphides. His observations have been repeated and extended by a number of subsequent writers, so that the principal facts must be familiar to all entomologists. It is therefore unnecessary here to enter into many details. There is nothing remarkable in the process of oviposition, which is conducted in the manner usual with parasitic Hymenoptera: the female confides to each puceron a single egg, which is matured in a few days; the larva remains generally in the body of the victim till the final change, making no separate cocoon; the interior of the inflated Aphis is however lined with very fine silk. This is the general rule, to which the genus *Praon,* so far as is known, offers the only exception, to be mentioned hereafter in its place. The apterous adult Aphides are generally chosen by preference, probably because they are commonly of large size, and supply a greater portion of nutriment.

No doubt a vast number of these destructive vermin perish annually from the attacks of their enemies, but it does not appear that the mischief they cause is ever effectually controlled. The amateurs of rose-culture generally find that an infested plant shews strong signs of deterioration in spite of the industry of the female Aphidius, which, to be effectual, must be supplemented by the more vigorous measures of human skill. Some of these parasites, as the common *Aphidius avenæ* and *A. ervi,* Haliday, are known to attack several different kinds of Aphis; but in general they are more exclusive, attaching themselves each to one particular species.

The number of species is certainly very large, but so little attention has been paid to their distinctions, that it is impossible to speak with any confidence; the subject may almost be regarded as untouched. In fact there exist only two monographs to which recourse may be had for detailed information, that of Nees v. Esenbeck, containing 15 species, and that of Haliday, which extends to 44: the few scattered descriptions occurring in other authors refer for the most part to species previously published, or not being conceived upon any fixed plan, they are in general useless for identification. My own opportunities of observing these insects have been too few and too desultory to be of much importance in so wide a subject, and the increased number of species which I am able to record, as well as the facts relating to their habits, are largely due to my friend Mr. Bignell, who with his accustomed liberality, entrusted to me his whole collection for a long time. This collection includes the pucerons and their parasites exhibited together, with the necessary notes of their origin, and is probably unique in the kingdom. The Aphides have been named from Buckton's Monograph, while they were fresh; the parasites were determined by me. I need scarcely remark that this operation involves much difficulty. It appears useless, except in a limited number of cases, to collect specimens at hap-hazard, as they can seldom be identified with certainty. The minute differences which distinguish them, and the dissimilarity of the sexes, are serious obstacles, which become still more intractable after the drying of the specimens. The only way seems to be, to take from their food-plant a sufficient number of infested Aphides (easily recognised by their swollen and motionless bodies), and to keep them till their parasites come forth: by this means the correct association of the sexes is insured, and their characters may be verified or recorded from fresh specimens. A certain smattering of botanical knowledge is requisite, sufficient to name the wild and garden plants of Great Britain; and also the somewhat rarer accomplishment of a knowledge of Aphides; but this latter may always be acquired by the use of Buckton's Monograph.

A few hyperparasites of the Aphidiides have been observed, the commonest being the minute Cynipids of the genus *Allotria*. It is now certain, from the observations of Bignell, that these are true hyperparasites, depositing their eggs in the bodies of the *Aphidii* contained within the pucerons. Other parasites, of less certain habits, belong to the Chalcididæ and Proctotrypidæ, respecting which it still remains doubtful whether their attacks are directed against the *Aphides* themselves, or against their internal devourers. I shall take occasion to mention these hyperparasites in their proper places.

Table of Genera.

(2)	1.	Prædiscoïdal areolet separated from the 1st cubital by a nervure which is often partially, but never wholly, effaced ...		3
(1)	2.	Prædiscoïdal areolet not distinct from the 1st cubital		7
(4)	3.	No intercubital nervures; the single cubital areolet extends to the tip of the wing	i.	Praon.
(3)	4.	Intercubital nervures more or less distinct; 3 cubital areolets		5
(6)	5.	Abdomen lanceolate, subsessile; antennæ 11-jointed in both sexes	ii.	Ephedrus.
(5)	6.	Abdomen orbicular, subpetiolate; antennæ with more than 11 joints ...	iii.	Toxares.
(8)	7.	Abdomen orbicular	iv.	Monoctonus.
(7)	8.	Abdomen lanceolate		9
(10)	9.	Antennæ 10-13-jointed; ventral valve of the ♀ furnished with two setiform apical appendages, longer than the terebra	v.	Trioxys.
(9)	10.	Antennæ with more than 13 joints (rarely with 11, 12, or 13 joints, in the most minute of the genus *Aphidius*); ventral valve of the ♀ without appendages		11
(12)	11.	Head transverse, not produced behind the eyes; cheeks not dilated; anal nervure interstitial	vi.	Aphidius.
(11)	12.	Head longer than broad, much produced behind the eyes; cheeks dilated; anal nervure springing from the middle of the extremity of the podiscoïdal areolet	vii.	Dyscritus.

I. PRAON, Haliday.

Hal., Ent. Mag., i, 483 (1833).

Head subglobular, flattened anteriorly; maxillary palpi 4-, labial 3-jointed; mandibles deeply bidenticulate. Antennæ with a variable number of joints, always greater in the males. Mesothoracic furrows distinct; thorax somewhat downy. Prædiscoïdal areolet separated from the 1st cubital by a nervure more or less indistinct; podiscoïdal widened exteriorly: no intercubital nervures, the radial nervure forming no angles, the single cubital areolet extending to the tip of the wing; stigma triangular, short, but prolonged in a fine line to the parastigma; costal areolet of the hind wings closed. Abdomen of the ♀ almost sessile, lanceolate, shorter in the ♂, oval sublinear, first segment short, the spiracular tubercles basal. Terebra conical, horizontal or slightly curved upwards.

This genus may be recognised (1) by the radial nervure, which presents no vestige of the anastomoses giving origin to the intercubital nervures; (2) by the stigma, which is shorter than in the other genera, but emits a linear prolongation to the parastigma; and (3) by the shortness and width of the 1st segment, giving a sessile appearance to the abdomen. Eight species have been described in Europe, and a greater number in America; the determination of all of them is difficult. Three are found in the monograph of Nees v. Esenbeck, arranged by that author under the genus *Blacus*, but their descriptions are unsatisfactory. The species of *Praon*, in passing into the pupal state, depart from the practice adopted by the other known Aphidians; the latter, as mentioned above, remain within the body of the puceron, which serves them instead of a cocoon. The *Praons*, on the contrary, pierce a hole in the belly of the Aphis, and construct for themselves a separate shelter on the leaf beneath, resembling a tent or pavilion, usually surmounted by the empty skin of the victim; see a Memoir by Mr. Howard (*Insect Life*, vol. iv., p. 196) where is figured the construction made by an American species, corresponding exactly with those found in England on currant and other leaves. The Chalcid hyperparasite *Pachycrepis clavata*, Walker, was supposed by Haliday to be the maker of these tent-like cocoons (Ent. Mag., ii., p. 99), but, as it appears, erroneously, both Bignell and myself having several times obtained *Praon*, and not *Pachycrepis*, from the tents in question. The Chalcididæ also are not generally known to make cocoons, availing themselves of the body of their defunct host, or else changing into a naked pupa on the ground.

TABLE OF SPECIES.

(2)	1.	Antennæ of the ♀ 14-jointed (rarely with 13 or 15–18 joints); those of the ♂ 15-18-jointed	1. *abjectum*, Hal.
(1)	2.	Antennæ ♂ ♀ 18–23-jointed	3
(4)	3.	Abdomen yellowish rufous; occiput and mesonotum black, the rest of the body testaceous, pubescent	2. *exoletum*, Nees.
(3)	4.	Abdomen blackish or fuscous, often more or less testaceous at the base ...	5
(6)	5.	Wings infumated below the radial areolet	3. *dorsale*, Hal.
(5)	6.	Wings not infumated	7
(8)	7.	Antennæ ♂ ♀ notably longer than the body	4. *longicorne*, Marsh.
(7)	8.	Antennæ of the ♀ not or hardly longer than the body; those of the ♂ a little longer	9
(10)	9.	First abdominal segment reddish testaceous at the extremity, or entirely of that colour, as well as the base or the whole of the 2nd segment	5. *flavinode*, Hal.
(9)	10.	First abdominal segment fuscous, like all the following; segments 2–3 with a slight rufous tinge	6. *volucre*, Hal.

1. *Praon abjectum*, Haliday.

Aphidius (*P.*) *abjectus*, Hal., Ent. Mag., i, 485, ♀.
P. abjectum, Marsh., Species des Hym. d'Eur. et d'Alg., Bracon. vol. ii, p. 534, ♂ ♀.

The smallest species, of shorter form than the rest, and resembling *exoletum* which is distinguished by its rufous abdomen.

♀ Black, abdomen brown, paler at the middle of the base. Oral parts and palpi brownish. Antennæ rather shorter than the body, 14-jointed, rarely with 13- or 15–18-joints, the 3rd joint testaceous at the base. Metathorax smooth, not areated. Wings subhyaline; squamulæ black; radicles brownish; stigma pale, cinerous; basal nervures fuscous, the others almost effaced; cubital nervure scarcely perceptible, but reaching to the point where the 2nd cubital should terminate. Legs ferruginous; base of the 4 posterior femora, middle of tibiæ, coxæ and tips of tarsi, fuscescent. Abdomen somewhat longer than the head and thorax, and in the middle as broad as the latter; 1st segment clear brown, one half longer than broad, its tubercles basal, subobsolete; the following segments form an oval, lanceolate, and acute at the apex; 2nd segment of the same colour, the following becoming gradually darker, the last black. Valves of the terebra black. ♂ Similar; antennæ entirely black, somewhat longer than the body, 15–18-jointed; 1st segment narrower than that of the ♀. Length, ¾–1 line; exp. 1½–2 lines.

Common in autumn; a parasite, according to Haliday, of one of the pucerons of *Angelica sylvestris*; also taken by him on a willow. More recently Bignell reared several specimens from *Aphis epilobii*, Kaltenbach, on *Epilobium hirsutum*, hairy willow-herb; from *Aphis hieracii*, Kaltenbach, on *Pastinaca sativa*, the parsnip; and from *Tychea phaseoli*, Passerini, on *Phaseolus vulgaris*, the kidney bean. It attacks also *Siphonophora lactucæ*, Kalt., on *Lactuca scariola*, the lettuce, and from this last aphis, which formerly infested lettuces in my garden, I bred the two sexes.

2. *Praon exoletum*, Nees.

Bracon exoletus, Nees, Mag. Ges. Berl., 1811, p. 30.
Aphidius exoletus, Nees, Mon. i, 25; Wesm., Nouv. Mém. Ac. Brux. 1835, p. 81; Ratz., Ichn. d. Forst. iii, 63; Bouche, Naturg. (1834) 162, ♂ ♀.

Aphidius (*P.*) *exoletus*, Hal., *lib. cit.*, 484, ♂ ♀.
P. exoletum, Marsh., *lib. cit.*, p. 535, ♂ ♀.

Abdomen reddish testaceous; occiput and mesonotum black; the rest of the body testaceous, pubescent. ♀ Head wider than the thorax, testaceous beneath the antennæ, black above, almost smooth. Antennæ blackish with the 3 first joints testaceous, 18–23-jointed. Wings hyaline with an obscure tinge, pubescent; stigma and nervures pale. Legs testaceous; claws black. First abdominal segment rectangular, subcylindric, margined, slightly rugulose, somewhat constricted in the middle; the following segments almost flat above, the apical segment bifid at the extremity. Terebra as long as the two last segments. ♂ Testaceous; occiput, eyes, and tips of the antennæ, black; mesonotum infuscated; abdomen lanceolate, acute at the extremity. Length, ⅔ line.

VAR. Body blackish; legs rufo-testaceous.

I have not seen this species, described as above by Nees and others. It has been noticed in several countries of Europe, viz., Germany, Italy, Belgium, and Russia.

3. *Praon dorsale*, Haliday.

Aphidius (*P.*) *dorsalis*, Hal., *lib. cit.*, 484, ♀.
P. dorsale, Marsh., *lib. cit.*, p. 536, ♀.

Abdomen fusco-ferruginous, obscure, the 1st segment blackish. ♀ Blackish, the underside of the thorax rufotestaceous. Clypeus and oral parts rufotestaceous; palpi paler, elongate. Antennæ 20–21-jointed, broadly testaceous at the base. Wings elongate, ample, hyaline, with a small cloudy space beneath the radial nervure; stigma pale brown, yellowish during life; nervures fuscous; squamulæ piceous. Legs flavo-ferruginous, slender, longer than in the other species. First abdominal segment narrowed posteriorly. Terebra black. ♂ Unknown. Length, 1¼; exp. 2½ lines.

Not common, according to Haliday, who had seen only three females. The species is distinguished by the unusual length of the palpi, wings, and legs.

4. *Praon longicorne*, Marshall.

P. longicorne, Marsh., *lib. cit.*, p. 536, ♂ ♀.

Antennæ ♂ ♀ considerably longer than the body. ♀ Head and thorax black; abdomen piceous, testaceous at the extremity, 1st segment rufous, black at the base. Antennæ very slender, filiform, 22-jointed, black, with the 3 first joints testaceous. Thorax black both above and beneath ; metathorax beset with whitish hairs. Wings ample, very long, hyaline ; squamulæ and radicles testaceous, stigma pale yellow ; nervures brownish. Legs flavo-testaceous ; abdomen lanceolate, hardly longer than the head and thorax ; 1st segment twice as long as broad, longitudinally wrinkled, margined, with very small tubercles, which are placed before the middle ; the sides of this segment diverge a little from the base as far as the tubercles, after which they are parallel to the extremity ; the last segment, the greater part of the preceding, and the ventral valve are testaceous. Valves of the terebra black. ♂ Smaller ; antennæ one-third longer than the body, 22-jointed, black, with the 2 first joints testaceous ; clypeus and mandibles rufescent ; palpi pale testaceous ; legs more obscure than those of the ♀, femora dull reddish, hind coxæ infuscated at the base ; abdomen shorter than the head and thorax, 1st segment black, 2nd testaceous with a dark spot on each side ; following segments brown. ♀ Length, 1⅓ ; exp. 3 lines ; ♂ length, 1 ; exp., 2½ lines.

The sexes not having been bred together, there is no proof that they are correctly paired, nevertheless they present only the usual difference of sex, while the length of the antennæ renders them distinct from the rest of the species. I captured the ♀ in Wales, and Bignell reared the ♂ in Devonshire from *Siphonophora chelidonii*, Kaltenbach, the puceron commonly found on the greater celandine, *Chelidonium majus*, but in this instance living on *Rubus idæus*, the raspberry bush.

5. *Praon flavinode*, Haliday.

Aphidius (*P.*) *flavinodis*, Hal., *lib. cit.*, 485, ♀.
P. flavinode, Marsh., *lib. cit.*, p. 538, ♀, pl. xvii, f. 2.
? *Blacus emacerator*, Nees, Mon., i, 193, ♂ ♀, *teste* Curtis in "Guide."

♀ First abdominal segment rufotestaceous at the extremity, or entirely of that colour, as well as the base or the whole of the 2nd. Head and thorax black above ; face, prothorax, and pectus, rufotestaceous ; abdomen after the 2nd segment, dark brown. Oral parts yellowish. Antennæ shorter than the body, having 18–19-joints, of which the 3 first are testaceous. Mesothoracic furrows complete and distinct ; metathorax rufescent, without a medial carina. Wings hyaline, less ample than those of *dorsale* (sp. 3) ; stigma colourless (yellow during life), the nervures which surround it, as well as those of the basal region, fuscous, distinct; 1st discoïdal areolet half confounded with the 1st cubital; radial nervure short, arcuate; cubital nervure nearly effaced. Legs shorter than those of sp. 3, testaceous, including the coxæ. Abdomen compressed from the base of the 3rd segment, carinated above throughout its length; 1st segment one half longer than broad, with salient tubercles situated near the base; 3rd and following segments black, as well as the short valves of the terebra.* ♂ Unknown. Length, 1; exp. $2\frac{1}{3}$ lines.

Rare; a parasite of *Pterocallis tiliæ*, L., the puceron of *Tilia europæa*, the lime tree; and of *Siphonophora absinthii*, L., the puceron of *Artemisia absinthium*, wormwood.

6. *Praon volucre*, Haliday.

Aphidius (*P.*) *volucris*, Hal., *lib. cit.*, 484, ♂ ♀.
P. volucre, Marsh., *lib. cit.*, p. 538, ♂ ♀.
? *Blacus angulator*, Nees, Mon., i. 193, ♂.

Abdomen dark-brown, the 2nd and 3rd segments with a rufous tinge. ♀ head and thorax black; prothorax sometimes rufotestaceous above. Head subglobular, not wider than the thorax; clypeus rufotestaceous; palpi paler. Antennæ very slender, filiform, as long as the body, with 19 joints, of which the two basal are rufescent, the 3rd testaceous, and all the rest black; 3rd joint very long. Mesothoracic furrows distinct; prothorax wrinkled transversely, sometimes black beneath and sometimes rufous; metathorax smooth, without a medial carina. Wings hyaline; squamulæ, radicles, and nervures pale brownish testaceous; stigma very pale, yellowish; 1st discoïdal areolet not entirely separated from the 1st cubital; radial nervure curved without an angle, its external portion (the 3rd abscissa) traced almost invisibly to the tip of the wing, as also is the cubital nervure. Legs obscurely testaceous. Abdomen longer than the head and thorax, lanceolate, brown, black at the extremity, somewhat lighter or rufescent on the 2nd suture and at the base of the 2nd segment; belly reddish-brown; ventral valve somewhat surpassing the last dorsal segment. Valves of the terebra black. ♂ Similar; antennæ a little longer than the body, stouter than those of the ♀, 22-jointed, black with the two basal joints brownish; 3rd joint of the same length as the following; legs more obscure; abdomen somewhat claviform, not longer than the head and thorax. Length, 1¼; exp. 2¼ lines.

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* The valves of the terebra of Hymenoptera being almost always black, it seems superfluous to mention their colour; but as some of the present group have testaceous valves, the distinction must be noticed.

The commonest species of the genus: it seems to be polyphagous, having been reared from the following pucerons: *Callipterus quercus*, Kalt. on *Quercus robur*, the oak; *Siphonophora sonchi*, L. on sow-thistle, *Sonchus oleraceus*; *S. absinthii*, L. on *Artemisia absinthium*, wormwood; *S. chelidonii*, Kalt. on the greater celandine, *Chelidonium majus*; *Aphis pruni*, Réaumur, infesting the apple-tree, *Pyrus malus*; the plum-tree, *Prunus domestica*; the apricot-tree *P. armeniaca*; and the medlar, *Mespilus germanica*. To these may be added some undetermined pucerons of the garden chrysanthemum, *Chrysanthemum sinense*, and of the Reine-Marguerite or China-aster, *Aster chinensis*. The pupal state lasts only 11 days; it is passed in a pyramidal tent-like cocoon constructed on a leaf, under the empty skin of the aphis, which either remains in position, or is detached by the wind or other accident. A ♂ bred from *Callipterus* had the 1st segment rufous, and the dividing nervure between the 1st cubital and prædiscoïdal areolets almost extinct. The hyperparasites observed from this species were *Allotria Ullrichi*, Giraud; *Isocratus vulgaris*, Walker; and an indeterminable or new species of *Lamprotatus*.

II. EPHEDRUS, Haliday.

Hal., Ent. Mag., i. 485 (1833).

Head as in the last genus, except that the labial palpi are only 2-jointed. Antennæ 11-jointed in both sexes, the 3rd joint longest in the ♀, hardly if at all elongate in the ♂. Thorax pubescent or glabrous; mesothoracic furrows indistinct, converging as usual. Prædiscoïdal areolet complete; 3 cubital areolets, the 2nd longer than broad, receiving the recurrent nervure near its base; stigma prolonged and attenuated at both ends; radial areolet complete; cubital nervure inchoate only; anal nervure almost interstitial; no costal areolet in the hind wings. Abdomen subpetiolate or subsessile, lanceolate, compressed at the extremity in the ♀; in the ♂ shorter, oboval or sublinear; 1st segment more or less narrow, cylindric, somewhat arched, its tubercles obsolete.

Four European and two American species have been described. They are very similar to the genus *Aphidius*, but the neuration of the wings suffices to separate them. It is difficult to determine any one of the three English species without possessing the others for the purpose of comparison. Wesmael, unacquainted with the writings of Haliday, named this genus *Elassus* (1835).

Table of Species.

(2) 1.	First abdominal segment subrectangular, shorter and broader than in the two following species, twice as long as broad, gibbous at the base, with spiracular tubercles situated before the middle	1. *validus*, Haliday.
(1) 2.	First abdominal segment linear, three times as long as broad; spiracular tubercles situated in the middle	3
(4) 3.	Stigma narrow, attenuated and much elongated inwards	2. *lacertosus*, Haliday.
(3) 4.	Stigma broader, less attenuated and elongated inwards	3. *plagiator*, Nees.

1. *Ephedrus validus*, Haliday.

Aphidius (*E.*) *validus*, Hal., *lib. cit.*, 485, ♂ ♀.
E. validus, Marsh., *lib. cit.*, p. 542; ♂ ♀, pl. xvii. f. 5.

♀ Form much shorter than that of the other species; body pubescent, pitchy black with a paler spot in the middle of the base of the 2nd segment. Head punctulate. Antennæ shorter than those of sp. 2; 3rd joint testaceous. Thorax punctulate. Wings subhyaline or slightly infumated; stigma pale brown, narrower than that of sp. 3, broader and shorter than that of sp. 2. Legs ferruginous. Abdomen oblong, lanceolate; 1st segment blackish, granulated, not shining. Valves of the terebra stout, black, elevated at the extremity, in form somewhat resembling a plough-share. ♂ Similar; antennæ entirely black. Length, 1¼; exp. 2½ lines.

A rare species according to Haliday, described from three specimens in the old collection of the Ent. Soc. of London. Reared by Bignell from *Myzus cerasi*, Fab., the common black puceron of the cherry tree.

2. *Ephedrus lacertosus*, Haliday.

Aphidius (*E.*) *lacertosus*, Hal., *lib. cit.*, 486, ♂ ♀.
E. lacertosus, Marsh., *lib. cit.*, p. 543, ♂ ♀.

♀ Black, shining, pubescent. Antennæ black, with the 1st joint ferruginous, the 3rd very long. Wings longer than in sp. 3, slightly infumated; nervures brown, stigma pale, yellow during life. Legs ferruginous; hind femora infuscated. Abdomen linear-lanceolate; 1st segment linear, blackish; 2nd and 3rd piceous or testaceous. Valves of the terebra rather slender, black. ♂ Similar; antennæ entirely black, not longer than those of the ♀. Length, 1¼; exp. 2½ lines.

This parasite is rather common in the fields, attacking certain pucerons which live on the tine-tare, *Ervum hirsutum*, the pest of corn-fields; the species of these pucerons has not been determined. Like the preceding, it also destroys *Myzus cerasi*, Fab. According to Haliday the ♀, in the act of oviposition, carries the abdomen in the same manner as the true *Aphidii*, but she pierces the back of the puceron, having the terebra somewhat inclined, for this purpose; the stroke is not so instantaneous, being often prolonged for several seconds.

3. *Ephedrus plagiator*, Nees.

Bracon plagiator, Nees, Mag. Ges. Berl. 1811, p. 17.
Aphidius (*E.*) *plagiator*, Hal., *l. c.*; Curtis in Morton's Cyclop. Agric., s. v. *Aphis*, pl. xvii, ff. 7, 8; Farm. Ins. pp. 290, 292, pl. xxxix, f. 14, ♂ ♀.
Aphidius parcicornis, Nees, Mon., i, 16; *Elassus parcicornis*, Wesm., Nouv. Mém. Ac. Brux., p. 86, pl. i (wing), ♂ ♀.
E. plagiator, Marsh., *lib. cit.*, p. 544, ♂ ♀.

♀ Antennæ longer than the head and thorax. Black, shining, pubescent, abdomen piceous. Oral parts brownish red; palpi obscure. Antennæ compressed, rather short, the apical joint not longer than the preceding; 1st joint rufous, the rest black. Metathorax regularly areated; the middle compartment generally the most distinct, pentagonal. Wings hyaline, nervures brown; stigma rather large, not much elongated internally, testaceous. Legs dull red, the middle pair darker, the hind pair darker still, with the trochanters and the base or the greater part of the tibiæ rufescent; 4 posterior coxæ blackish. Abdomen linear-lanceolate, piceous brown, sometimes obscurely testaceous in the middle of the 2nd segment; 1st segment narrow, cylindric, rugose, marked before the extremity with a transverse impression. Valves of the terebra slender, conical, black, a little longer than the apical segment, truncate at the extremity. ♂ Similar, usually smaller, with darker legs; abdomen rounded at the extremity. Length, ½–1; exp. 1–2 lines.

A supposed parasite of *Siphonophora granaria,* Kirby, a puceron infesting several species of grass. Yet the identification seems doubtful, judging by Buckton's figure, (Aphides, vol. i, pl. vii,) which represents an insect very different from an *Ephedrus.* However that may be, Mr. Buckton's observation is conclusive with regard to the minute hyperparasite *Lygocerus carpenteri,* Curtis, which he viewed under the microscope, enclosed with some *Siphonophoræ.* This was a ♀, who was observed to deposit several eggs in the bodies of those *Siphonophoræ* previously occupied by Aphidian parasites. It is therefore no longer to be doubted that the species of *Lygocerus,* and probably many others, if not all, of the *Ceraphron* group in the Proctotrypidæ, are hyperparasites. *E. plagiator,* though not very common, is widely spread, having been noticed in Germany, Italy, Belgium, Holland, and Spain, whence I have received specimens from Seville.

III. TOXARES, Haliday.

*Trionyx,** Hal., Ent. Mag., i, 487 (1833); *Toxares,* Hal., in Westw., Int. ii, Synopsis, 65 (1840).

Head transverse, rounded. Palpi rather long, the maxillary 4-, the labial 3-jointed; mandibles acute, deeply bidenticulate. Antennæ somewhat elongate, 19–22-jointed. Thorax glabrous; mesothoracic furrows hardly visible, converging as usual. Neuration in general similar to that of *Ephedrus*; prædiscoïdal areolet complete; 3 cubital areolets; stigma narrow, elongate, lanceolate at both ends; radial areolet cultriform, reaching the tip of the wing; anal nervure not interstitial; intercubital nervures sometimes indistinct. Abdomen of the ♀ spathulate, or claviform and flattened, subpetiolate; that of the ♂ narrower, oblong; 1st segment linear, the tubercles situated before the middle; segments 2–3 the longest, the rest short, transverse. Terebra curved downwards, its valves much dilated underneath, of deltoïd form, trifid at the extremity.

This genus resembles *Praon* in the palpi, and *Ephedrus* in the wings; in other respects it comes nearer to *Monoctonus,* the antennæ, the 1st segment, the abdomen of the ♀, and the general facies, being much the same; only the *Monoctoni* have their labial palpi 2-jointed, according to Haliday. In order not to mistake a *Toxares,* on a merely cursory inspection, for one of the smaller *Opii*, (*pygmæator*, etc.), it is sufficient to observe the length of the petiole. Only one species occurs in the British fauna, and another in America. The so-named *Toxares* (*Trionyx*) *rapæ*, Curtis (Farm. Ins. 73), and figured in McIntosh (Book of the Garden, ii, 194), belongs to the genus *Aphidius.*

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* *Trionyx* was rejected on account of its preoccupation as a genus of Chelonian Reptilia.

Toxares deltiger, Haliday.

Aphidius (*Trionyx*) *deltiger*, Hal., *l. c.*, ♂ ♀.
Toxares deltiger, Marsh., *lib. cit.*, p. 546, ♂ ♀, pl. xvii, f. 7.

♀ Head and thorax black, shining; abdomen either testaceous, infuscated on the sides, or entirely fuscous; the 1st segment always rufescent. Mouth and palpi yellowish. Antennæ about 19-jointed, longer than the body, blackish with the 5 or 6 basal joints, or only the 3rd joint, testaceous. Metathorax carinated in the middle, and divided into regular compartments, like that of *Aphidius.* Wings hyaline; squamulæ and radicles dull testaceous; stigma brownish yellow, nearly of the same form as that of *Ephedrus validus.* Legs rufotestaceous. Abdomen of the same colour, more or less darkened at the sides and posteriorly. Valves of the terebra rufotestaceous. ♂ Similar; antennæ 21–22-jointed, the two basal joints fuscous, the 3rd testaceous (in my specimen); abdomen less rounded than that of the ♀; 1st segment more clearly rufous. Length, 1¼; exp. 2½ lines.

Rare in England, and unnoticed elsewhere. I have never possessed more than a single example.

IV. MONOCTONUS, Haliday.

Hal., Ent. Mag., i, 487 (1833).

Head transverse, rounded. Maxillary palpi 4-jointed; labial very short, 2-jointed. Antennæ not longer than the body, with a variable number of joints, greater in the ♂. Mesonotum glabrous, the furrows obsolete or very indistinct; metathorax without a medial carina, not areated. Prædiscoïdal areolet confounded with the 1st cubital; 2 cubital areolets at most, the 1st large, irregular, shorter than in the genus *Aphidius*, not so long as the stigma, half obsolete; stigma narrow, triangular, elongate, emitting the radial nervure from its middle; 1st abscissa of this nervure straight, placed obliquely; 2nd as long as the 1st, then suddenly disappearing; podiscoïdal areolet open on the inner side; anal nervure interstitial. This description of the wings is made from *M. nervosus*; in the other species the characteristic part of the neuration is colourless and indistinct, the cubital and radial areolets entirely disappearing. Some males having the 2nd cubital areolet badly defined are hardly distinguishable from those of the following genus, which however may be separated by the form of the stigma. Abdomen of the ♀ spathulate, suborbicular; or else lanceolate, enlarged in the middle; 1st segment slender, linear. Terebra curved downwards, its valves acutely pointed, and dilated at the base beneath, so as to resemble somewhat a plough-share.

The three species are far from common, and difficult to find, occurring on aquatic plants in marshes.

TABLE OF SPECIES.

(2) 1.	Second cubital areolet complete and distinct	1. *nervosus*, Hal.
(1) 2.	Second cubital areolet obsolete as to its exterior half, or entirely effaced	3
(4) 3.	Face, prothorax, pectus, and tip of the abdomen, rufotestaceous; the rest of the head, and the disc of the thorax, black; abdomen brown, testaceous at both ends	2. *paludum*, Marsh.
(3) 4.	Face, prothorax, pectus, and tip of the abdomen, black; the rest of the abdomen pale	3. *caricis*, Hal.

1. *Monoctonus nervosus*, Haliday.

Aphidius (*M.*) *nervosus*, Hal., *lib. cit.*, 488, ♀; *M. nervosus*, Marsh., *lib. cit.*, p. 548, ♀.

♀ Black: antennæ 16-jointed, testaceous towards the base, the scape fuscous. Wings obscure; stigma pale brownish; nervures stout, fuscous. Legs ferruginous, hind femora infuscated. First abdominal segment blackish, 2nd pale brown; the rest blackish. Valves of the terebra brown. ♂ Unknown. Length, $\frac{3}{4}$; exp. $1\frac{1}{2}$ lines.

Only two females were known to Haliday, the author of the above description; the species has not occurred since.

2. *Monoctonus paludum*, Marshall.

M. paludum, Marsh., *l. c.*, ♀, pl. xviii., f. 2.

♀ Oral parts and palpi testaceous. Antennæ shorter than the body, 13-jointed, black, with the 1st joint and the base of the 2nd testaceous. Metathorax brown, posteriorly rufescent. Wings hyaline;

squamulæ blackish ; radicles testaceous ; stigma pale, almost hyaline ; basal nervures brown ; all the exterior nervures effaced except the commencement of the radial. Legs rufotestaceous, including the coxæ ; femora and tibiæ infuscated above, or almost entirely, both ends remaining pale. Abdomen stout in the middle, lanceolate, acute at the extremity ; 1st segment rufescent, nearly linear, 2½ times as long as broad, the tubercles situated before the middle ; 2nd in great part pale testaceous, fuscescent at the sides ; segments 3 to 5 brown ; the two apical segments pale testaceous. Valves of the terebra pale, streaked with fuscous above. ♂ Unknown. Length, 1 ; exp. 2 lines.

I captured two females in the south of England, probably Devonshire.

3. *Monoctonus caricis*, Haliday.

Aphidius (*M.*) *caricis*, Hal., *l. c.*, ♀ ; Ruthe, Stett. Zeit., 1859, p. 314.
M. caricis, Marsh., *l. c.*, ♂ ♀.

♀ Blackish brown ; abdomen pale brown or dull-ferruginous, black at the extremity. Antennæ testaceous at the base ; the scape blackish. Wings hyaline with an obscure tinge ; stigma pale. Legs flavorufous or ferruginous. First abdominal segment shorter than in *nervosus*. Valves of the terebra brown or testaceous. ♂ Black ; antennæ as long as the body, 16-jointed ; legs piceous or ferruginous at the articulations ; abdomen narrower than that of the ♀, pale piceous, blackish at the extremity, and sometimes on the 1st segment. A variety occurs in which the colours are paler. Length, ¾ ; exp. 1¾ lines.

Occurs rarely in swampy places on the fescue-grass, *Festuca pratensis*, on sedge, *Carex*, and various *Graminaceæ*.

V. TRIOXYS, Haliday.

Hal., Ent. Mag., i, 488 (1833).

Head transverse, rounded, more bulky than in the preceding genera. Maxillary palpi 4-, labial 2-jointed. Antennæ of the ♀ short, sometimes incrassated towards the tips, 11-jointed (rarely 10- or 12-jointed) ; those of the ♂ 13-jointed. Mesothoracic furrows obsolete. Prædiscoïdal areolet confounded with the 1st cubital ;

2nd cubital entirely effaced; stigma triangular; radial nervure curved without an angle, effaced before reaching the tip of the wing, it is however longer than in the genus *Aphidius.* Abdomen lanceolate, petiolate; ventral valve of the ♀ furnished with two slender appendages or horns longer than the terebra, curved upwards at the extremity; 1st segment linear, the spiracular tubercles variously placed. Terebra directed somewhat downwards, as in *Monoctonus.*

The females may be distinguished at a glance by the armature of the abdomen; the males may be easily mistaken for such of the genus *Aphidius* as have the 1st cubital areolet indistinct, but in the latter the radial nervure is shorter, the antennæ have usually more articulations, and the form of the stigma is generally narrower. Ten species of *Trioxys* have been described belonging to the European fauna, and a greater number in America.

Table of Species.

I have found it impossible to tabulate some of these species in a satisfactory manner, partly for want of specimens, and partly (as in the case of the three last,) on account of defective descriptions.

(2)	1.	Antennæ 12-jointed...	1. *auctus*, Hal.
(1)	2.	Antennæ with fewer than 12 joints ...	3
(4)	3.	Antennæ with 11 joints	5
(3)	4.	Antennæ with 10 joints	2. *brevicornis*, Hal.
(6)	5.	Antennæ progressively incrassated from base to apex	7
(5)	6.	Antennæ filiform	11
(8)	7.	Face testaceous...	3. *heraclei*, Hal.
(7)	8.	Face black; only the oral parts pale ...	9
(10)	9.	Intermediate segments of the abdomen fuscous; the posterior yellow (1st segment dull testaceous)	4. *aceris*, Hal.
(9)	10.	All the segments black, except the 1st, which is clear yellow	5. *betulæ*, Marsh.
(12)	11.	Spiracles of the 1st segment situated behind the middle...	15
(11)	12.	Spiracles situated in the middle	13
(14)	13.	Appendages of the ventral valve in the ♀ black. Length, 1 line	6. *centaureæ*, Hal.
(13)	14.	Appendages of the ventral valve in the ♀ testaceous. Length, ½ line	7. *angelicæ*, Hal.
(16)	15.	Last joint of the antennæ soldered to the preceding, and hardly discernible	8. *minutus*, Hal.
(15)	16.	Last joint of the antennæ free	17
(18)	17.	Abdomen pale yellow, the intermediate segments, and sometimes the posterior, infuscated	9. *pallidus*, Hal.
(17)	18.	Abdomen indistinctly yellowish anteriorly; 1st segment infuscated in the middle	10. *letifer*, Hal.

1. *Trioxys auctus*, Haliday.

Aphidius (*T.*) *auctus*, Hal., *lib. cit.*, 489, ♂ ♀; Marsh., *lib. cit.*, p. 550, ♂ ♀.

♀ Head and thorax black, shining; abdomen piceous, paler or even yellowish in the middle of the base; 1st segment fulvo-rufous. Antennæ 12-jointed. Oral parts rufo-flavescent; base of the antennæ of the same colour. Wings hyaline, somewhat obscure; stigma narrower than in most of the species, rufo-flavescent during life, afterwards, pale brown, like the nervures. Legs fulvo-rufous; coxæ of the 4 posterior, middle of their femora and of their tibiæ, and tips of their tarsi, blackish. First abdominal segment rather stout, having its spiracles between the base and the middle. ♂ Antennæ slender, elongate, black, 12-jointed; fore femora infuscated above, tibiæ of the same pair infuscated in the middle; 4 posterior legs darker than those of the female. Length, $\frac{3}{4}$; exp. 2 lines nearly.

Not uncommon on willows in England; taken also in Holland by Van Vollenhoven.

2. *Trioxys brevicornis*, Haliday.

Aphidius (*T.*) *brevicornis*, Hal., *lib. cit.*, 491, ♀; Marsh., *lib. cit.*, p. 551, ♀.

♀ Black; abdomen pale brownish, darker at the sides, dull testaceous at the extremity. Antennæ 10-jointed, very short, thickened towards the tips: apical joint large, oblong, 3rd pale at the base. Legs piceous, all the knees, as well as the underside of the fore femora and fore tibiæ, ferruginous. Spiracles of the first segment indicated by minute denticles, situated near the middle, more or less indistinct. ♂ Unknown. Length, $\frac{1}{3}$; exp. $\frac{2}{3}$ line.

Found by Haliday on *Umbelliferæ*, especially the *Angelica sylvestris*, but unnoticed since his time.

3. *Trioxys heraclei*, Haliday.

Aphidius (*T.*) *heraclei*, Hal., *lib. cit.*, 490, ♂ ♀.
Aphidius obsoletus, Wesm., Nouv. Mém. Ac. Brux. 1835, p. 83, ♀, pl. i, (wing); Ratz., Ichn. d. Först., ii, 58; iii, 62, ♂ ♀, pl. ii, f. 27 (wing).
T. heraclei, Marsh., *lib. cit.*, p. 552, ♂ ♀.

♀ Black; face yellowish, abdomen of the same colour, infuscated in the middle. Antennæ 11-jointed, progressively thickened from the base, which is clear yellow; last joint incrassated. Prothorax yellowish, less frequently brownish. Legs yellowish, 4 posterior femora and tibiæ infuscated, except at the base; hind coxæ blackish. First abdominal segment denticulated or crenulate on each side near the middle; appendages of the ventral valve more strongly curved than in the other species. ♂ Almost wholly black; antennæ of the same colour; fore legs, as well as the trochanters, tibiæ, and base of tarsi of the 4 posterior, dull testaceous; abdomen blackish brown with the base dull yellowish. Length, ¾; exp. 1½ lines.

Parasite of the pucerons of the cow-parsnip, *Heracleum sphondylium*; very common in July, afterwards disappearing. Taken in Holland by Van Vollenhoven.

4. *Trioxys aceris*, Haliday.

Aphidius (*T.*) *aceris*, Hal., *lib. cit.*, 490, ♀.
Aphidius cirsii, Curtis, B. E., pl. ccclxxxiii, not of Haliday, ♀.
T. aceris, Marsh., *lib. cit.*, p. 552, ♀, pl. xviii, f. 4.

♀ Black; face of the same colour, except the oral parts, which are testaceous; abdomen brown above, yellow posteriorly, the 1st segment dull testaceous. Antennæ 11-jointed, much longer than in any of the following species, progressively thickened from the base; apical joint large, oblong; 2nd and 3rd joints dull testaceous. Wings hyaline, pubescent, with a slight dusky tinge; stigma very pale, almost hyaline; nervures brown. Legs rufotestaceous; 4 posterior femora, middle of their tibiæ, and tips of their tarsi infuscated; so also the 4 posterior coxæ. Abdomen short, depressed; tubercles of the 1st segment placed near the base. ♂ Unknown. Length, 1; exp. 2¼ lines.

Curtis in 1831 described and figured this insect as *Aphidius cirsii*, a supposed parasite of the aphis of *Cirsium arvense*, or *Carduus arvensis*. But Haliday, describing in 1833 the same specimen, reared by himself from the puceron of the sycamore, *Acer pseudoplatanus*, changed the name *cirsii*, as being incorrect. Taken in Holland by Van Vollenhoven.

5. *Trioxys betulæ*, Marshall.

T. betulæ, Marsh., *lib. cit.*, p. 553, ♀.

♀ Black; head and thorax of that colour, only the oral parts testaceous; abdomen black except the 1st segment which is clear yellow. Antennæ 11-jointed, thickened towards the tips, shorter than the body, black with the 3 basal joints testaceous. Metathorax carinated in the middle, regularly areated. Wings hyaline; squamulæ fuscous; radicles testaceous; nervures very slender, those of the basal region brownish, the radial and border of the stigma testaceous, the latter very pale, hyaline. Legs flavotestaceous; the 4 posterior brown with the knees and base of the tarsi pale; hind coxæ brown. Abdomen longer than the head and thorax, lanceolate, compressed and pointed at the apex; 1st segment linear, 2½ times as long as broad, having its tubercles placed before the middle; 2nd, reddish brown in the middle, blackish on the sides; following segments black. Valves of the terebra black, compressed, curved downwards in form of a stout claw; appendages of the ventral valve testaceous. ♂ Unknown. Length, ¾; exp. 1½ lines.

A single ♀ was bred by Bignell from *Callipterus betularius,* the puceron of the birch, *Betula alba.*

6. *Trioxys centaureæ,* Haliday.

Aphidius (*T.*) *centaureæ,* Hal., *lib. cit.*, 490, ♀.
T. centaureæ, Marsh., *lib. cit.*, p. 554, ♂ ♀.

♀ Appendages of the ventral valve black. Black, shining. Antennæ 11-jointed, filiform, longer than the head and thorax, but shorter than in *auctus,* black with the 2nd joint and base of the 3rd testaceous. Palpi brownish. Thorax glabrous; mesothoracic furrows distinct. Wings hyaline; squamulæ and radicles dull testaceous; stigma very pale yellow after death; nervures slender, brownish. Legs dull testaceous; coxæ, femora, and tibiæ of the 4 posterior in great part infuscated; trochanters and base of the tibiæ testaceous. Abdomen linear-lanceolate, black; 1st segment narrow, testaceous at both ends, or entirely; 2nd narrowly testaceous at the extremity; tubercles situated beyond the middle (a character peculiar to this species and the following). ♀ Similar; antennæ rather shorter than the body, 13-jointed, with the extremity of the 2nd joint and base of the 3rd testaceous; legs darker than those of the ♀; abdomen rounded at the apex. Length, 1; exp. 2 lines.

Not common, according to Haliday. The ♀ when engaged in oviposition behaves like an *Aphidius*: she applies the terebra to the belly of the puceron; the stroke given is instantaneous; the two remarkable processes or horns of the 6th segment are quite useless in the operation. Haliday once reared this parasite from the aphis of the knapweed, *Centaurea nigra*, but obtained only females; in endeavouring to repeat his experiment I had better success, procuring several specimens of both sexes.

7. *Trioxys angelicæ*, Haliday.

Aphidius (T.) angelicæ, Hal., *lib. cit.*, 489, ♀.
T. angelicæ, Marsh., *lib. cit.*, p. 555, ♀.

♀ Appendages of the ventral valve testaceous. Head and thorax black; abdomen nigro-fuscous, lighter or approaching to testaceous on the 1st segment and in the middle of the 2nd. Oral parts and palpi yellowish. Antennæ 11-jointed, filiform, longer than the head and thorax, the two basal joints yellow. Wings hyaline; squamulæ black; radicles dull testaceous; stigma reddish yellow, pale brown after death. Legs fulvo-ferruginous; 4 posterior femora above, middle of tibiæ, and tips of tarsi, infuscated; hind coxæ blackish, testaceous at the extremity. Abdomen lanceolate, widest in the middle; 1st segment slender, bidenticulate on each side a little beyond the middle, yellowish, more or less infuscated in the middle. ♂ Unknown. Length almost ½; exp. 1 line.

Haliday considered this species to be parasitic on some aphis of the *Angelica sylvestris*. Bred by Bignell from *Siphonophora olivata*, Buckton, infesting in autumn the thistle, *Carduus lanceolatus*.

8. *Trioxys minutus*, Haliday.

Aphidius (T.) minutus, Hal., *lib. cit.*, 491, ♀.
T. minutus, Marsh., *lib. cit.*, p. 556, ♀

♀ Apical joint of the antennæ closely united to the preceding. Head and thorax black; abdomen piceous, dull testaceous at the apex. Similar to *brevicornis* (sp. 2) but with 11-jointed antennæ, the apical joint not elongate. Legs piceous; knees fulvous; tarsi shorter. ♂ Unknown. Length, ¾; exp. 1½ lines.

Taken once only by Haliday upon a box-bush, *Buxus balearica*, crowded with aphides.

9. *Trioxys pallidus*, Haliday.

Aphidius (T.) pallidus, Hal., *lib. cit.*, 489, ♀.
T. pallidus, Marsh., *lib. cit.*, 556, ♀

♀ Apical joint of antennæ free and distinct. Abdomen pale testaceous, with the intermediate segments, or even the posterior, infuscated. Head and thorax black; oral parts yellow. Antennæ 11-jointed, slender, longer in proportion to the body than in the rest of the species, fuscous with the 4 basal joints yellow. Wing hyaline; stigma pale yellow; nervures brownish; radicles and squamulæ dull stramineous. Legs either wholly pale, or with the middle of the hind femora and tibiæ slightly infuscated. Abdomen slender. ♂ Unknown. Length, $\frac{7}{8}$; exp. 1$\frac{1}{2}$ lines.

Taken rarely by Haliday on sedge, *Carex*, and once on a nut-bush, *Corylus avellana*.

10. *Trioxys letifer*, Haliday.

Aphidius (*T.*) *letifer*, Hal., *lib. cit.*, 491, ♀.
T. letifer, Hal., *lib. cit.*, p. 567, ♀.

♀ Abdomen anteriorly dull yellowish; 1st segment infuscated in the middle. Antennæ 11-jointed, rather short, with the scape brown, and the base of the flagellum pale. Similar to *heracleï* (sp. 3). Head and thorax black. Legs obscure; tarsi short. ♂ Unknown. Length almost $\frac{1}{2}$; exp. 1 line.

Reared by Haliday from the pucerons of a species of willow, *Salix ulmifolia*, in June.

VI. APHIDIUS, Nees.

Nees, Act. Ac. L.C., 1818, p. 302.

Head as wide as the thorax, rarely wider or narrower; face short; mandibles feebly bidenticulate; palpi with a variable number of joints, 4, 3, or 2, in the maxillary, 3, 2, or 1, in the labial. Antennæ 11–27-jointed; the number is important for specific discrimination, it is nearly constant in each species, admitting only 1 or 2 joints in excess or defect; it is more variable in the species which have 20 joints and upwards; only one species is known with 27 joints, which does not occur in England. Mesothoracic furrows usually effaced, rarely more or less visible; metathorax very short, abruptly inclined, often canaliculate in the middle and regularly areated by raised lines. First cubital areolet always confounded with the prædiscoïdal, sometimes open also beneath, owing to the effacement of the cubital nervure, in which case it ceases to exist; sometimes limited on the underside by the same nervure; intercubital nervures none, or very indistinct; the discoïdal areolets are also liable to disappear, the 2nd (when it exists) is closed posteriorly; anal nervure interstitial; præbrachial and pobrachial nervures approximated; no præbrachial areolet in the hind wings. The ♀ of *A. ephippium* is apterous. Abdomen of the ♀ subpetiolate, lanceolate, longer than the head and thorax; rounded at the apex, and sometimes a little spathulate in the ♂; 1st segment linear, occupying at most ¼ or ⅓ of the total length of the abdomen, rarely constricted in the middle by reason of the prominence of the spiracular tubercles; 2nd suture distinct, covered with a loose and translucent membrane which allows freedom of movement to the abdomen, especially in the act so familiar to these insects of doubling back the abdomen under the thorax; this suture always forms a conspicuous pale mark on the abdomen; ventral valve of the ♀ without appendages.

This genus, after the dismemberments above described, still comprises the vast majority of the tribe. Some further attempts to break up the genus have been made by Förster (Synopsis, p. 247), but they are too partial and vague to be really available, and are rendered useless besides by the existence of transitional forms of doubtful position. The number of species cannot be estimated with any approach to correctness, but it is probably not much less than that of the Aphidæ, comprising therefore many different forms respecting which we have at present no information. Haliday's work, which is the most comprehensive, describes twenty-four species, and the author declares that his only object was to establish a few sections, by the help of which future naturalists might make a more considerable advance in the subject. Most of these sections, converted into genera, have been detailed above; they constitute the principal and most obvious divisions into which the tribe can be separated, and have every appearance of permanence. If we seek to extend further the system of dismemberment, we find, so far as I have been able to make out, only more trifling characters, confined to a single species, and therefore improper for the establishment of good genera. The males of *Aphidius* differ much from their respective females, while at the same time they resemble each other so closely, that their separation by inspection of individuals captured at random is almost certain to lead to error; it is necessary therefore to breed both sexes together, which can generally be done without difficulty. The first table therefore contains males and females of the correctness of whose association there can be no doubt, and this category fortunately comprises the majority of the species. A second dichotomy will be devoted to a few males not contained in the first table, but whose peculiarities are so marked that they can be recognised apart from their females; the number of these is very restricted, doubtful forms, which are many, having been excluded.

Table of Species.

1. *Males and Females.*

(2)	1.	Apterous in the female sex, male unknown	1. *ephippium*, Hal.
(1)	2.	Winged in both sexes	3
(4)	3.	First cubital areolet limited on the lower side by the cubital nervure, sometimes not very distinctly	5
(3)	4.	First cubital areolet entirely effaced ...	65
(6)	5.	Abdomen linear, very slender, three times as long as the head and thorax..	2. *longulus*, Marsh.
(5)	6.	Abdomen lanceolate, not remarkably slender, more or less dilated in the middle, only a little longer than the head and thorax	7
(8)	7.	Antennæ of the ♀ composed of 20–22 joints, those of the ♂ 25-jointed. Large species (*Pinicolæ*, Hal.) attacking the large pucerons of coniferous trees (*Lachnus*, &c.)	9
(7)	8.	Antennæ ♂ ♀ with fewer joints. Smaller species, attacking the typical *Aphidæ*	17
(10)	9.	Abdomen yellow, at least posteriorly ...	11
(9)	10.	Abdomen black or fuscous, with the two first sutures pale; or cinctured with yellow bands, black posteriorly	13
(12)	11.	Antennæ black at the apex; wings entirely hyaline; 1st segment gradually dilated from base to apex; terebra curved, ascending; tubercles of 1st segment situated before the middle...	3. *pictus*, Hal.
(11)	12.	Antennæ testaceous at the apex; wings infumated beneath the stigma and towards the tip; 1st segment linear as far as the tubercles, which are placed in the middle, the condylus dilated; terebra straight, horizontal...	4. *infulatus*, Hal.
(14)	13.	Abdomen with only the two first sutures more or less pale	15
(13)	14.	Abdomen cinctured with distinct yellow bands, of which the anterior is broadest	5. *abietis*, Marsh.
(16)	15.	First segment linear as far as the tubercles, condylus gradually dilated; terebra obtuse, horizontal	6. *pini*, Hal.
(15)	16.	First segment linear, condylus not dilated; terebra acute, ascending	7. *laricis*, Hal.
(18)	17.	Antennæ of the ♀ 17–20-jointed (in *A. ervi* 21-jointed)	19
(17)	18.	Antennæ of the ♀ 12–16-jointed	37
(20)	19.	Antennæ ferruginous	8. *urticæ*, Hal.
(19)	20.	Antennæ black or blackish	21
(22)	21.	Abdomen, from the base of the 2nd segment, entirely testaceous	9. *gregarius*, Marsh.

(21) 22. Abdomen, from the base of the 2nd segment not entirely testaceous 23

(24) 23. Abdomen saffron yellow, the anterior segments banded or spotted with brownish... 25

(23) 24. Abdomen black, fuscous, or brown, at most with some of the sutures, a spot between the 2nd and 3rd segments, and sometimes the apex, pale 27

(26) 25. First segment brown, rarely testaceous; femora and tibiæ more or less infuscated; a dark spot on each side of segments, 2–5... ... ... 10. *rosæ*, Hal.

(25) 26. First segment and the whole of the legs yellow; disc of the anterior segments more or less infuscated ... ... 11. *loniceræ*, Marsh.

(28) 27. Mesothoracic furrows indicated by longitudinal depressions 29

(27) 28. Mesothoracic furrows effaced... 33

(30) 29. Prothorax black ... ... 12. *avenæ*, Hal.

(29) 30. Prothorax entirely, or on the under side, testaceous 31

(32) 31. Antennæ 19–21-jointed, almost as long as the body; neuration strong and distinct; abdomen black with the 2nd suture pale; tubercles of the 1st segment distinct... ... ... 13. *ervi*, Hal.

(31) 32. Antennæ 18-jointed, much shorter than the body; neuration very fine; abdomen brown with the anterior sutures pale; tubercles of the 1st segment effaced ... ... 14. *ulmi*, Marsh.

(34) 33. Length $\frac{3}{4}$ line; neuration very fine and indistinct; cubital nervure effaced, except under the 2nd cubital areolet ... 15. *pascuorum*, Marsh.

(33) 34. Length $1\frac{1}{4}$–$1\frac{1}{2}$ lines; neuration distinct; cubital nervure visible from its origin to the end of the 2nd cubital areolet.. 35

(36) 35. All the legs rufotestaceous; abdomen brownish, segments 2–5 narrowly pale at the base ... ... 16. *pterocommæ*, Marsh.

(35) 36. Four posterior legs more or less infuscated; abdomen dark brown anteriorly, segments after the 4th yellow.. 17. *granarius*, Marsh.

(38) 37. Valves of the terebra black, straight, horizontal 41

(37) 38. Valves of the terebra testaceous, curved downwards 39

(40) 39. First abdominal segment robust, its tubercles situated before the middle ... 18. *crepidis*, Hal.

(39) 40. First abdominal segment slender, its tubercles situated in the middle ... 19. *pseudoplatani*, Marsh.

(42) 41. Prothorax black; wings infumated; cubital nervure effaced towards its base, reappearing under the 1st cubital areolet, after which it is again obsolete ... ... 20. *dissolutus*, Hal.

(41) 42. Prothorax testaceous; wings hyaline; cubital nervure visible from its origin to the end of the 1st cubital areolet... 43

(44) 43. Antennæ 16-jointed... ... ... 21. *sonchi*, Marsh.

(43) 44. Antennæ with 15 joints, or fewer than 15 45

(46) 45. Antennæ with 15 joints 47

(45) 46. Antennæ with 14 joints, or fewer than 14 53
(48) 47. Base and apex of the abdomen testaceous 49
(47) 48. Only the base of the abdomen testaceous 51
(50) 49. Hind coxæ black ... ... 22. *asteris*, Hal.
(49) 50. Hind coxæ yellow ... ... 23. *ribis*, Hal.
(52) 51. Prothorax rufotestaceous; legs testaceous, hind femora rufescent ... ... 24. *cirsii*, Hal.
(51) 52. Prothorax black or ferruginous; legs rufotestaceous with the outer side of the femora middle of tibiæ, and tips of tarsi infuscated... ... ... 25. *eglanteriæ*, Hal.
(54) 53. Antennæ with 14 joints 55
(53) 54. Antennæ with 13 joints, or fewer than 13 61
(56) 55. Abdomen yellow at both ends; pale brown in the middle ... ... 26. *hortensis*, Marsh.
(55) 56. Abdomen blackish or infuscated at the apex 57
(58) 57. First abdominal segment yellow or ferruginous 59
(57) 58. First abdominal segment blackish, or partly pale ... ... 27. *chrysanthemi*, Marsh.
(60) 59. Cubital nervure visible as far as the end of the 1st cubital areolet ... ... 28. *matricariæ*, Hal.
(59) 60. Cubital nervure colourless, hardly visible beneath the 1st ... ... 29. *arundinis*, Hal.
(62) 61. Antennæ with 13 joints 63
(61) 62. Antennæ with 12 joints ... ... 30. *cardui*, Marsh.
(64) 63. Under side of 1st cubital areolet distinct; 1st abdominal segment brown or blackish ... ... 31. *salicis*, Hal.
(63) 64. Under side of 1st cubital areolet indistinct; 1st segment yellow ... ... 32. *exiguus*, Hal.
(66) 65. Antennæ 15-jointed 67
(65) 66. Antennæ with 14 joints, or fewer than 14 69
(68) 67. Wings hyaline; stigma very pale, colourless; abdomen pale yellow, infuscated in the middle... ... ... 33. *scabiosæ*, Marsh.
(67) 68. Wings whitish; stigma yellow; abdomen blackish, including the 1st segment ... 34. *leucopterus*, Hal.
(70) 69. Antennæ with 14 joints ... ... 35. *brassicæ*, Hal.
(69) 70. Antennæ with fewer, *i.e.* with 13 or 12 joints 71
(72) 71. Antennæ with 13 joints 73
(71) 72. Antennæ with 12 joints, the apical formed of two joints soldered together 36. *fabarum*, Marsh.
(74) 73. Abdomen subsessile, 1st segment short, cyathiform ... ... 37. *ambiguus*, Hal
(73) 74. Abdomen subpetiolate, 1st segment long, linear, or sublinear 75
(76) 75. Abdomen brown, 1st segment testaceous; length ½ line ... ... 38. *dauci*, Marsh.
(75) 76. Abdomen black with the two 1st sutures pale; length 1 line ... ... 39. *polygoni*, Marsh.

2. *Males whose Females are unknown.*

(2) 1. Cubital nervure distinct as far as the end of the 1st cubital areolet 3
(1) 2. Cubital nervure incomplete or none ... 5

(4)	3. Third abscissa of the radial nervure half completed; nervures very fine; antennæ 20–21-jointed, longer than the body; length 1¼ lines	40. *silenes*, Marsh.
(3)	4. Third abscissa none; basal nervures stout; antennæ 19-jointed, not longer than the body; length 1 line	41. *crithmi*, Marsh.
(6)	5. Antennæ 17–18-jointed	7
(5)	6. Antennæ 16-jointed, or 13-jointed	9
(8)	7. Cubital nervure distinctly traced beneath the 1st cubital areolet, elsewhere effaced; antennæ 17-jointed	42. *absinthii*, Marsh.
(7)	8. Cubital nervure none, or almost totally extinct; antennæ 18-jointed	43. *euphorbiæ*, Marsh.
(10)	9. Antennæ 16-jointed	11
(9)	10. Antennæ 13-jointed	13
(12)	11. Podiscoïdal areolet longer than half the præbrachial transverse nervure; wings of normal size; antennæ as long as the body	44. *lychnidis*, Marsh.
(11)	12. Podiscoïdal areolet shorter than half the præbrachial transverse; wings more ample than usual; antennæ rather longer than the body	45. *cerasi*, Marsh.
(14)	13. Mesothoracic furrows not entirely effaced; between them is an additional longitudinal furrow; smallest species, length ⅜ line	46. *acalephæ*, Marsh.
(13)	14. Mesothoracic furrows effaced; no additional longitudinal furrow; length ½ line	47. *callipteri*, Marsh.

I. MALES AND FEMALES.

1. *Aphidius ephippium*, Haliday.

A. ephippium, Hal., Ent. Mag., ii, 105, ♀; Marsh., Species des Hym. d'Eur. et d'Alg. Bracon., vol. ii, p. 559, ♀.

♀ Rufotestaceous; head, metathorax, and posterior portion of the abdomen infuscated. Antennæ fuscous, yellowish at the base, 14-jointed. Legs ferruginous, 4 posterior coxæ slightly infuscated, as well as the middle of the femora and tibiæ. Abdomen fuscous, pale at the base; 1st segment yellow or ferruginous, slender, linear. Valves of the terebra obtuse, black. Haliday has made a section of this species, at the same time remarking that except in being apterous, it differs in no respect from its congeners. Length, ¾–1½ lines.

Rare; I possess no specimen myself, but have seen it occasionally in other collections. Mr. Alfred Beaumont lately sent me one which he found among wet *Sphagnum* near Whitby, in October, 1897.

2. *Aphidius longulus,* Marshall.

A. longulus, Marsh., *lib. cit.*, p. 560, ♀.

♀ Abdomen linear, very slender, three times as long as the head and thorax. Head black; thorax dark brown above, pale testaceous beneath; prothorax pale; abdomen brown with a transverse band on each suture, and the extremity, pale testaceous. Head somewhat wider than the thorax; oral parts and palpi pale. Antennæ 18-jointed, very slender, as long as the abdomen, brownish testaceous with the 1st and 3rd joints yellow. Thorax blackish above, reddish in certain lights; mesothoracic furrows effaced; metathorax areated. Wings hyaline with a greyish tinge; squamulæ and radicles pale testaceous; stigma pale yellowish; basal nervures stout, distinct; cubital nervure extending to the end of the 1st cubital areolet. Legs long, slender, testaceous; coxæ paler; base of the hind coxæ, femora and tibiæ of the same pair, rufotestaceous; hind tibiæ shorter than the tarsi. First abdominal segment more than three times as long as its mean width; petiole testaceous, condylus brown, testaceous at the anterior end, somewhat dilated; tubercles indistinct, situated below the middle; following segments much narrower than the thorax, forming an elongate cylinder slightly compressed towards the apex; 2nd segment testaceous at the extremity; 3rd and 4th brown, paler on the sutures; 5th and following testaceous, tinged with brownish on the sides; a small brown patch at the extremity of the apical segment. Valves of the terebra stout, blunt, black. ♂ Unknown. Length, $1\frac{1}{2}$; exp. 2 lines.

This female has almost the colours of *urticæ* (Sp. 8) but the differences of form forbid its union withthat species: the remarkable length of the abdomen suffices to distinguish it from all those that follow.

3. *Aphidius pictus,* Haliday.

A. pictus, Hal., *lib. cit.*, 95; Marsh., *lib. cit.*, p. 563, ♀, pl. xviii. f. 7.

♀ Luteous; eyes, a spot on the vertex, margin of the occiput, superior orbits, three patches on the mesonotum, scutellum, metathorax and 1st abdominal segment, black. Antennæ black at the apex. Mesonotum shining, very finely punctulate. Wings hyaline; squamulæ and radicles yellowish, nervures fuscous, stigma, fusco-ferruginous. Fore legs testaceous; the 2nd pair slightly infuscated; hind legs fuscous with the trochanters, the underside of the femora and the tibiæ at both ends, dull luteous. Abdomen very elongate, turned up at the extremity; 1st segment granulate, not shining, gradually dilated from base to apex, though the increase in width is very small; tubercles scarcely discernible; anterior segments infuscated above. Terebra slender, its valves black, ascending, curved, about as long as half the 1st joint of the hind tarsi. ♂ Unknown. Length nearly 2–2¼; exp. 3 lines.

Found very seldom on *Pinus sylvestris*, the Scotch fir. This species, the four following, and doubtless many more occurring in palæarctic forests, form a section apart, distinguished by greater size and consequent distinctness of the generic characters, as well as by their parasitism on the larger Aphidæ (*Lachnus*, etc.) which infest coniferous trees. These peculiarities, however, are insufficient to justify the establishment of a new genus. The synonymy given in the catalogue (1872) p. 110, under *A. varius*, which includes *pictus*, Hal., seems dubious, and is therefore omitted in this place.

4. *Aphidius infulatus*, Haliday.

A. infulatus, Hal., *lib. cit.*, 96; Marsh., *lib. cit.*, p. 546, ♂ ♀.

♀ Head rufotestaceous; vertex and eyes black; thorax black; abdomen rufotestaceous. Antennæ black, scape testaceous, 5 or 6 apical joints yellow, the terminal joint fuscous at the extremity. Prothorax luteous beneath; mesonotum shining, finely and vaguely punctulate. Wings hyaline, infumated below the stigma and towards the tip; squamulæ and radicles stramineous; nervures fuscous; stigma fusco-ferruginous. Legs luteous, the 4 posterior in great part clouded with an obscure tinge; hind coxæ with a fuscous spot. Anterior segments of the abdomen infuscated above, the posterior immaculate; 1st segment as in sp. 3, but less dilated at the apex, black. ♂ Black; antennæ more slender than in the allied species, entirely black; wings hyaline; squamulæ and radicles dull stramineous; nervures and stigma fuscous; fore legs stramineous, duller on the outer side; 4 posterior legs fuscous with almost the whole of the trochanters, both ends of the tibiæ, and base of the tarsi stramineous; all the coxæ, black; abdomen piceous with a luteous patch in the middle above; 1st segment scarcely dilated at the extremity. Length nearly 1¼–1½; exp. 2¼–2¾ lines.

Found rarely upon *Abies larix*, the larch.

5. *Aphidius abietis,* Marshall.

A. abietis, Marsh., *lib. cit.,* p. 565, ♀.

♀ Black ; face, prothorax, and furrows of the mesonotum, dull testaceous ; abdomen piceous, cinctured with distinct yellow bands, the anterior the broadest. Head somewhat wider than the thorax ; oral parts and palpi dull testaceous. Antennæ nearly as long as the body, 21-jointed, black with the two basal joints testaceous. Thorax testaceous beneath ; posterior portion of the pectus black ; scutellum fuscescent at the extremity ; metathorax beset with white hairs, and bisected by a wide and deep channel. Wings hyaline ; squamulæ and radicles stramineous ; stigma large, triangular, blackish, like the nervures ; 2nd intercubital nervure colourless ; cubital nervure not visible beyond the end of the 1st cubital areolet. Fore legs testaceous ; 4 anterior coxæ of the same colour ; hind coxæ black ; all the trochanters testaceous ; intermediate femora and middle of their tibiæ, fuscous ; hind femora and tibiæ black, the latter testaceous at the base ; their tarsi black. Abdomen shorter than the head and thorax ; 1st segment slender, linear to beyond the tubercles, which are situated somewhat before the middle ; condylus dilated from its base, so that the extremity of the segment is twice as wide as its base ; this segment is black, dull testaceous at the base ; 2nd segment yellow, infuscated in the middle towards the base ; 3rd yellow as far as the middle, the rest piceous ; following segments piceous with a yellow band at the base of each ; abdomen truncate at the extremity. Terebra hardly exserted, its valves conical, stout, black. ♂ Unknown. Length, 1½ ; exp. 2½ lines.

The unique ♀ above described was bred by Bignell out of *Lachnus pini,* L. infesting *Abies excelsa,* the spruce fir, as well as several other kinds of conifers.

6. *Aphidius pini,* Haliday.

A. pini, Hal., *lib. cit.,* 96 ; Marsh., *lib. cit.,* p. 566, ♂ ♀, pl. xviii. f. 6.

♀ Black ; face and prothorax impure testaceous ; a pale indeterminate spot on the 2nd suture. Head very broad ; oral parts and palpi dull testaceous. Antennæ black, with the two basal joints fusco-testaceous beneath. Mesonotum very finely wrinkled and punctulate, not shining ; the ordinary furrows distinct, as well as an additional channel between them, which does not extend to the scutellum ;

the mesonotum is either entirely black, or marked with testaceous lines between the lobes; humeral angles often testaceous; prothorax sometimes black above. Wings slightly infumated, especially towards the tips, and with a nebulous patch on the 2nd intercubital nervure; squamulæ and radicles yellowish; nervures and stigma fuscous, the latter large, triangular. Legs brownish testaceous, the middle pair more or less infuscated in the middle of the femora and tibiæ; hind legs still darker, with the knees and the base of the tarsi pale; hind coxæ infuscated; all the trochanters testaceous. Abdomen black or blackish, longer than the head and thorax, lanceolate, compressed towards the extremity; 1st segment linear to beyond the tubercles, which are placed in the middle; condylus dilated as in the preceding species. Valves of the terebra obtuse, broad, not ascending. ♂ Black, with the 2nd suture pale; legs darker; all the coxæ black; wings hyaline, whitish, stigma and nervures black; condylus of the 1st segment very little dilated. Length, 2; exp. 3 lines.

Parasite of the species of *Lachnus* inhabiting *Pinus sylvestris* and *Abies larix*; bred by Bignell out of *Lachnus pini*, L. taken on the spruce fir, *Abies excelsa.*

7. *Aphidius laricis,* Haliday.

A. laricis, Hal., *lib. cit.,* 97; Marsh., *lib. cit.,* p. 567, ♂ ♀.

♀ Black, with the 2nd suture and less frequently one of the following, pale brownish. Mesonotum shining, very finely and vaguely punctulate. Wings hyaline, infumated towards the tip and below the stigma; squamulæ and radicles brownish testaceous; nervures and stigma blackish. Fore legs yellowish, infuscated on the outer side, tarsi obscure; 4 posterior legs infuscated, tips of the trochanters and both ends of the tibiæ dull yellowish; all the coxæ black. First abdominal segment hardly or not at all widened posteriorly. Terebra short, ascending, the valves acute at the extremity. ♂ Wings white, not infumated; legs darker than those of the ♀. Length about 1½–2; exp. 2–2⅔ lines.

Reared by Haliday out of some puceron inhabiting *Abies larix.*

8. *Aphidius urticæ,* Haliday.

A. urticæ, Hal., *lib. cit.,* 100; Marsh., *lib. cit.,* p. 568, ♀.

♀ Slender, elongate, yellow; head and thorax infuscated or rufescent above; anterior segments of the abdomen infuscated towards their base, sutures and anal extremity pale. Antennæ 18–16-jointed, almost as long as the body, slender, pale yellow at the base, the flagellum ferruginous, sometimes rather obscure. Mesonotum either ferruginous or blackish, the usual furrows often yellow, feebly traced; scutellum testaceous; metathorax rufescent, areated by elevated lines darker than the ground colour. Wings hyaline; squamulæ and radicles pale yellow; nervures brownish or testaceous; stigma pale yellow, almost colourless; cubital nervure attaining the end of the 1st cubital areolet. Legs pale yellow. Abdomen elongate, compressed and carinated towards the extremity; 1st segment sublinear, three times as long as broad, infuscated in the middle, its tubercles situated beyond the middle, scarcely perceptible; 2nd and 3rd segments infuscated above, yellow on their ventral surface; 4th and 5th with only a small brownish spot on the disc, the rest clear yellow. Valves of the terebra black. ♂ unknown. Length, 1½; exp. 2½ lines.

This species may easily be mistaken for *A. rosæ* (sp. 10), which is occasionally found on nettles, or even for *A. loniceræ* (sp. 11), but these can be distinguished by their black antennæ, shorter and stouter than those of *urticæ*. It is a not very abundant parasite of *Siphonophora urticæ*, Kalt., the puceron of *Urtica dioica*, but which infests also *Geranium robertianum*, *Malva sylvestris*, and *Chelidonium majus*. The males have hitherto escaped observation, though I bred the species with special reference to them. Some of the Aphides which were watched for this purpose produced the common hyperparasite *Lygocerus carpenteri*, Curt.; others, the apterous Cynipid, *Allotria cursor*, Hartig. From one of them Bignell obtained *Agonioneurus basalis*, Westw., a rare and little known Chalcid, of which I have given a figure, I believe for the first time. With *urticæ* commences the long series of normal *Aphidii.*

9. *Aphidius gregarius*, Marshall.

A. gregarius, Marsh., E.M.M., vol. ix. 1872–73, p. 123; Spp. des Hym. d' Eur. et d' Alg. Bracon., vol. ii. p. 569, ♂ ♀; pl. xix, f. 1. ♀.

♀ Abdomen after the 1st segment entirely testaceous. Rufotestaceous; head black; mesonotum and metathorax red, more or less brownish or obscure. Head transverse, wider than the thorax; oral parts testaceous. Antennæ shorter than the body, blackish, 20-

jointed, the 1st joint testaceous, the 2nd brownish. Mesonotum without furrows, smooth, trilobate, each lobe marked with a spot of darker brown than the ground colour ; scutellum brown or rufescent, preceded by a paler space; metathorax carinated in the middle, areated, rufescent. Wings hyaline ; squamulae and radicles yellow ; basal nervures brownish ; stigma and nervures of the characteristic region pale green during life, afterwards testaceous ; cubital nervure complete as far as the end of the 1st cubital areolet. Legs testaceous ; base of hind coxæ, with femora and tarsi of the same pair, more or less infuscated. First abdominal segment brown or blackish, aciculated, three times longer than broad, linear as far as the tubercles, which are situated below the middle ; condylus somewhat dilated ; the rest of the abdomen fusiform, pale testaceous, each segment bordered posteriorly with a darker tint. Valves of the terebra black, straight, moderately stout. ♂ Similar, but with darker tints ; antennæ longer, about 25-jointed. Length, 1⅓ ; exp. 2½ lines

Parasite of *Melanoxanthus salicis*, L. a large puceron infesting willows, *Salix viminalis*, and poplars. Observed some years ago by Dr. Knaggs and Mr. McLachlan in a garden at Kentish Town. The pierced Aphides were extraordinarily numerous, crowded together around the base of the leaves on the twigs of willow. One of the observers remarks that he noticed a mass of them composed probably of some thousands, of which each individual must have been stung by an Aphidius. I possess to this day one of the twigs of willow entirely covered with empty skins of the pucerons. *Lygocerus carpenteri*, Curt. is a hyperparasite of this species.

10. *Aphidius rosæ*, Haliday.

Ichneumon aphidum, De Geer, Mém. ii. 866, pl. xxx. ff. 4—13. Not of Linné, Panzer, and Blanchard. The rest of the older synonymy is uncertain.
A. rosæ, Hal., *lib. cit.*, 97 ; Marsh., *lib. cit.*, p. 571, ♂ ♀.
A. cancellatus, Buckton, Mon. of Brit. Aphides, fig. I have not the precise reference at hand.
A rosarum, var. *β*, Nees, Mon., i. 19.

♀ Saffron yellow ; head above, and mesonotum, blackish ; abdominal segments 2–3, and often 4–5 infuscated on each side, in the form of interrupted bands or two rows of spots. Oral parts and palpi pale yellow. Antennæ 17–18-jointed, shorter than the body, and evidently shorter than those of *urticæ* (sp. 8), black, testaceous beneath at the extreme base. Wings hyaline; squamulæ and radicles pale yellow; stigma yellow or pale green during life, afterwards brownish, like the nervures, which are tolerably stout and distinct; cubital nervure complete as far as the end of the 1st cubital areolet; 2nd discoïdal areolet open internally. Fore legs yellow; the middle pair slightly infuscated; the hind pair still darker, with the tips of the trochanters and base of tibiæ pale; the tarsi infuscated. Abdomen much longer than the head and thorax, compressed posteriorly; 1st segment slightly widened from the base, its tubercles situated before the middle (which is not the case in *urticæ*, sp. 8); sometimes yellowish, sometimes brown with the extremity yellowish; the dark spots on the intermediate segments are variable in number and intensity. Valves of the terebra black. ♂ Dissimilar; black; oral parts testaceous; palpi pale brownish; antennæ 20-jointed; squamulæ and radicles impure testaceous; fore legs yellow, streaked with fuscous; the 4 posterior fuscous with the trochanters and base of the tibiæ yellowish; all the coxæ black; abdomen fuscous with the sutures pale, a larger pale patch on the 2nd suture. Length, 1½; exp. almost 3 lines.

This is the constant parasite of *Siphonophora rosæ*, Réaumur, the well known puceron of several species of rose-tree (*Rosa canina*, *gallica*, *centifolia*, etc.) to the exclusion of *R. rubiginosa*, the sweet-briar, which nourishes, according to Haliday, a peculiar *Aphis*, with its parasite *A. eglanteriæ* (sp. 35). Wild roses of whatever variety are less frequently attacked by aphides than the cultivated forms, upon which it is easy to find, in every garden, specimens of *Siphonophora*, accompanied by the present parasite, and another equally abundant, *A. avenæ*, Hal. or *picipes*, Nees (sp. 12), which association of species has originated some confusion in the older descriptions. *A. rosæ*, Hal. is not to be confounded with *A. rosarum*, Nees, which belongs, at least for the most part, to our sp. 12. *A. Protæus*, Wesm. (meant for *Proteus*), is another notable example of the confusion of species. *A. rosæ* was probably the principal subject of the experiments and observations of the older writers, Frisch, Geoffroy, Schrank, etc. but their works are valuable rather for generalities than specific distinctions: the reference to De Geer above given, however, is not doubtful. Haliday, in a long note (Ent. Mag. ii. 98) has given an able summary of the results obtainable from these sources.

In breeding the present species of *Aphidius* I encountered only two hyperparasites, *Lygocerus carpenteri*, Curt. in abundance, and a red-headed Cynipid which I believe to be the true *Allotria victrix*, Westw. Other hyperparasites of the species are mentioned by Haliday, belonging to the Chalcididæ; their modern names are *Isocratus vulgaris*, Walker, *Pachycrepis clavata*, Walk., *Cyrtogaster vulgaris*, Walk., and some of the genus *Encyrtus*, undetermined.

11. *Aphidius loniceræ*, Marshall.

A. loniceræ, Marsh., *lib. cit.*, p. 572, ♂ ♀; pl. xix, f. 2, ♀.
? *A. lutescens*, Hal., *lib. cit.*, 99, ♀.

♀ First abdominal segment and all the legs, yellow; disc of the anterior segments more or less infuscated. Head black above; meso- and metanotum fusco-rufescent; the rest of the body pale saffron yellow, partly white. Mouth, palpi, cheeks, and the whole underside of the head, white. Antennæ very slender, a little shorter than the body, 18-jointed; brown, with the radicle, the two basal joints and the base of the 3rd, white. Scutellum rufotestaceous; metathorax rufescent, areated, the compartments separated by black carinæ. Wings hyaline; squamulæ and radicles whitish; stigma pale yellow, almost colourless; basal nervures rather fine, pale brownish, the radial and other external nervures pale, much attenuated, subobsolete. Legs yellow; coxæ and trochanters white. Abdomen as in the preceding sp., but the faint dorsal bands are not interrupted, and the colour is paler. ♂ Dissimilar; head black; clypeus and palpi testaceous; antennæ 20-jointed, somewhat longer than the body, stouter than in the ♀, black, with the two basal joints and base of the 3rd rufescent; thorax black, rufescent beneath; prothorax entirely rufescent; legs testaceous; hind coxæ rufescent above towards the base; abdomen nigrofuscous with the two first sutures pale; belly rufescent. Length, 1¼–1½; exp. 2½–3 lines.

Nearly allied to the preceding, but distinguished by the great tenuity of the antennæ and the neuration, as well as by difference of origin. It may perhaps be *lutescens*, Hal. but the author has given no detailed description: he possessed only one ♀, the neuration of which, he says, resembled that of *rosæ*; this is not the case with the 10 specimens above described. They were reared by Bignell, 8 ♀s and 2 ♂s, from *Siphocoryne xylostei*, Schrank, the puceron of *Lonicera xylosteum*, fly-honeysuckle, but in this instance inhabiting *L. pericly-*

menum, the common woodbine. Others were reared out of *Siphonophora pisi*, Kalt. infesting *Silene inflata*, bladder-campion; and a ♀, the smallest of all, out of *Siphonophora urticæ*, Kalt. taken on a nettle, *Urtica dioica*.

12. *Aphidius avenæ*, Haliday.

A. avenæ, Hal., *lib. cit.*, 99, ♂ ♀; Curtis in Morton's Cyclop. Agric., *s. v. Aphis*, pl. xvii, ff. 5, 6; Farm Ins. pp. 290, 291, pl. xxxix, f. 12, and pl. J, f. 12; Marsh., *lib. cit.*, p. 573, ♂ ♀.
A picipes, Nees, Mon., i. 18, ♂ ♀.
? *A. infirmus*, Nees, *l.c.* ♂ ♀.
? *A. vulgaris*, Bouché, Naturg. (1834) 161.
? *A Protæus*, Wesm., Nouv. Mém. Ac. Brux. 1835, p. 75; Ratz. Ichn. d. Först. iii. 62 (partim).

♀ Black, with the 2nd suture fulvous or rufous, and the apical segments testaceous. Head as wide as the thorax: mandibles testaceous; palpi obscure. Antennæ 17–18-jointed, shorter and stouter than those of the following species, black, with the end of the 2nd joint and base of the 3rd, narrowly testaceous. Mesothoracic furrows distinct; metathorax shining, subrugulose posteriorly, areated, carinated in the middle. Wings hyaline, with stout and distinct nervures; squamulæ and radicles testaceous; stigma fulvous, becoming pale brown after death; nervures fuscous; cubital nervure complete to the end of the 1st cubital areolet. Legs in great part fuscous or blackish; fore femora and tibiæ rufescent or testaceous, sometimes streaked externally with fuscous; 4 posterior legs with the 2nd joint of the trochanters, both ends of the tibiæ, and base of the tarsi, testaceous. Abdomen lanceolate, compressed towards the extremity, black, shining, with a transverse band more or less pale on the 2nd suture, and segments 5–6 testaceous. Valves of the terebra black. ♂ similar to the ♂ of *rosæ* (sp. 10); palpi blackish; antennæ 20–21-jointed, as long as the body; legs darker than those of the ♀; abdomen black at the extremity. Length, 1½; exp. 3 lines.

This and the following are the largest species, after the Pinicolæ (spp. 3–7); they are common everywhere, and polyphagous, preying indiscriminately upon various kinds of *Aphis*. The present species has attracted the attention of several continental describers, and received different names: there is not much doubt that *picipes*, Nees, is identical; the other synonyms are less certain. Haliday reared some of his specimens from the pucerons of *Avena sativa,* the oat, which pucerons were probably *Siphonophora granaria,* Kirby; and others from an unnamed aphis infesting *Hypochæris radicata,* cat's-ear. The numerous specimens in the Bignell collection were bred out of *Siphonophora urticæ,* Kalt. infesting *Urtica dioica,* stinging nettle.

Siphonophora urticæ, Kalt.	infesting	*Urtica dioica*, stinging nettle.
„ *rubi*, Kalt.	„	*Rubus fruticosus*, bramble.
Siphocoryne xylostei, Schrank.	„	*Lonicera periclymenum*, woodbine.
Aphis scabiosæ, Kalt.	„	*Scabiosa succisa*, devil's-bit.
„ *myosotidis*, Koch	„	*Myosotis palustris*, forget-me-not.
„ *cratægaria*, Walk.	„	*Cratægus oxyacantha*, whitethorn.

The only hyperparasite obtained was the apterous Cynipid *Allotria cursor,* Hartig.

13. *Aphidius ervi,* Haliday.

A. ervi, Hal., *lib. cit.,* 100, ♂ ♀; Marsh., *lib. cit.,* p. 575, ♂ ♀; pl. xix, f. 3, ♀.
? *A. constrictus,* Nees, Mon., i. 20, ♀.
? *A. Protæus,* Wesm., Nouv. Mém. Ac. Brux. 1835, p. 75, Var. 7, ♀. (partim).

♀ Very like the preceding. Black, with the 2nd suture pale; face and prothorax testaceous or ferruginous; palpi yellowish; some females present the more sombre colouring of the males. Antennæ 19–21-jointed, slender, almost as long as the body, black, with the 1st joint and the base of the 3rd testaceous. Metathorax carinated in the middle, rugulose posteriorly, indistinctly areated. Wings hyaline or slightly infumated; squamulæ and radicles dull testaceous; stigma yellowish, brownish after death; nervures ferruginous brown, cubital continued to the end of the 1st cubital areolet. Legs flavo-testaceous; hind coxæ infuscated above at the base; 4 posterior tarsi slightly infuscated. Abdomen narrow, lanceolate, compressed towards the apex, somewhat variable in colour, all the sutures being occasionally pale as well as the whole of the apical segments, as in the preceding sp.; 1st segment nearly linear, three times as long as broad, with tubercles situated near the extremity. Valves of the terebra black. ♂ Similar, black; oral parts yellowish; palpi fuscous or black; antennæ black, about 23-jointed; 4 posterior coxæ, base of intermediate femora, and outer side of hind femora and tibiæ infuscated; or the legs sometimes almost entirely black. Length, 1½; exp. 3 lines.

Easily confounded with the preceding species, being equally common, and attacking some of the same species of Aphides. The antennæ of *ervi* are distinctly longer and more slender, with one or more additional articulations; the legs also are longer, and usually flavescent; the discrimination of the males is more difficult, but the antennæ of *ervi* are 23-jointed. Haliday reared specimens from some indeterminate pucerons infesting *Ervum hirsutum*, the tine-tare, and some species of *Trifolium*. The Bignell collection contains a good number bred out of *Siphonophora urticæ*, Kalt., *S. rubi*, Kalt., *S. rosæ*, Réaumur, *Tychea phaseoli*, Passerini, and *Aphis scabiosæ*, Kalt. The only hyperparasite noted was the Chalcid *Isocratus æneus*, Nees.

14. *Aphidius ulmi*, Marshall.

A. ulmi, Marsh., *lib. cit.*, p. 576, ♂ ♀.

♀ Black; prothorax brown above, testaceous beneath; abdomen brown with the anterior sutures pale. Oral parts and palpi testaceous. Antennæ much shorter than the body, 18-jointed, rather stout, black, with the two basal joints and the base of the 4th testaceous. Furrows of the mesonotum perceptible; metathorax carinated, areated. Wings hyaline; squamulæ, radicles and nervures dull testaceous; stigma very pale, almost hyaline; nervures very fine, scarcely discernible; cubital nervure continued to the end of the 1st cubital areolet. Legs testaceous; 4 posterior femora slightly infuscated; hind coxæ marked above, at the base, with a dusky spot. Abdomen lanceolate, much longer than the head and thorax; 1st segment nearly linear, three times as long as broad, testaceous as far as the middle, thence to the apex, black, its tubercles effaced; following segments brown; 2nd with its hind margin broadly pale; 3rd more narrowly margined; 4th and following rufescent posteriorly. Valves of the terebra black. ♂ Smaller; antennæ stouter, as long as the body, with 20 discrete joints, black, with the radicle testaceous; prothorax black; legs brown with the 2nd joint of the trochanters and the base of the tibiæ and of the tarsi, pale;

hind coxæ blackish ; abdomen much shorter, 1st segment entirely black ; the following brown with only the 2nd suture pale.

♀ Length, 1⅓ ; exp. 2¼ : ♂ length, 1⅛ ; exp. 2 lines.

Parasite of *Schizoneura ulmi*, L., the puceron of the elm, *Ulmus campestris.* Bignell has reared both sexes.

15. *Aphidius pascuorum*, Marshall.

A. pascuorum, Marsh., *lib. cit.*, p. 577, ♀.

♀ Black ; abdomen piceous, testaceous above at the apex. Oral parts and palpi fuscescent. Antennæ 17-jointed, shorter than the body, black, with the two basal joints brown. Mesothoracic furrows effaced ; metathorax carinated, areated. Wings hyaline, with very fine and indistinct neuration ; squamulæ and radicles impure whitish ; stigma colourless, hyaline ; nervures pale brownish, but visible only in the basal region, except the commencement of the radial, and the fragment of the cubital which forms the underside of the 1st cubital areolet. Legs fuscous, including all the coxæ ; trochanters and knees pale. Abdomen lanceolate, longer than the head and thorax ; 1st segment piceous, rather stout, twice as long as broad, its tubercles effaced. Valves of the terebra black. ♂ Unknown. Length, ¾ ; exp. 1½ lines.

Parasite of *Siphonophora longipennis*, Buckton, the puceron of *Poa annua*, annual meadow-grass : reared by Bignell. In some of his trials he obtained only two red-headed species of *Allotria*, one being *A. victrix*, Westw., and the other ticketed *erythrocephala*, Jurine ; this latter is now indeterminable. Both were probably hyperparasites of *A. pascuorum.*

16. *Aphidius pterocommæ*, Marshall.

A. pterocommæ, Marsh., *lib. cit.*, p. 578, ♀.

♀ Fuscotestaceous, head and thorax black above ; face and pectus testaceous, the latter black posteriorly. Head wider than the thorax ; oral parts, palpi, and sometimes the occiput, testaceous ; palpi white (in one specimen) ; mandibles black at the points. Antennæ almost as long as the body, 19–20-jointed, black, with the 1st joint, the apex of the 2nd, and the extreme base of the 3rd, testaceous. Prothorax and sides of the mesothorax rufotestaceous ; mesothoracic furrows effaced ; metathorax carinated, areated.

Wings hyaline; squamulæ and radicles testaceous; stigma and nervures brown, the latter stout and distinct; radial nervure angulated at the commencement of the 2nd cubital areolet; 2nd intercubital nervure sometimes faintly indicated; cubital nervure continued as far as the end of the 1st cubital areolet. Legs rufo-testaceous. Abdomen brownish, with segments 2–5 narrowly pale at the base; longer than the head and thorax, narrow, lanceolate, compressed towards the apex; 1st segment somewhat widened posteriorly, three times as long as its mean width, rufo-fuscous, the tubercles obsolete. ♂ Unknown. Length, 1¼; exp. 2½ lines.

Parasite of *Pterocomma pilosa*, Buckton, puceron of *Salix viminalis*, the common osier, on which it lives in company with *Melanoxanthus salicis*, L. (see sp. 9); Bignell bred 6 females. On a cursory inspection they resemble *urticæ* (sp. 8), and *rosæ* (sp. 10).

17. *Aphidius granarius*, Marshall.

A. granarius, Marsh., *lib. cit.*, p. 579, ♂ ♀.

♀ Head and thorax black above; face, prosternum and mesosternum testaceous, this last black posteriorly; abdomen dark brown, segments after the 4th yellow above. Clypeus, mandibles and palpi, testaceous. Antennæ shorter than the body, 17-jointed, black, with the radicle and upper side of the 2nd joint testaceous. Mesothoracic furrows effaced; metathorax carinated, areated, the spaces between the raised lines often rufescent. Wings hyaline; squamulæ and radicles testaceous; stigma hyaline with a yellowish tinge; nervures impure testaceous, moderately distinct; cubital nervure continued to the end of the 1st cubital areolet; a vestige remains of the second intercubital nervure. Legs fuscotestaceous; coxæ, femora, and tibiæ of the 4 posterior more or less infuscated; 2nd joint of trochanters, knees, tips of tibiæ, and base of tarsi, testaceous. Abdomen longer than the head and thorax, lanceolate, compressed towards the apex; 1st segment linear, margined, black, with no visible tubercles; 2–4 brown, becoming progressively paler posteriorly; a pale band on the second suture, or on the three first sutures; the rest of the abdomen pale testaceous above; beneath, it is brown to the apex, with only the sutures pale. Valves of the terebra black. ♂ Antennæ longer than the body, 19-jointed entirely black, except the radicles; face black; oral parts, and sides of prothorax testaceous; the rest of the thorax black; legs darker than those of the ♀; abdomen as long as the head and thorax, somewhat spathulate, fuscous to the apex, with the two first sutures testaceous. Length almost 1½; exp. 2½ lines.

Parasite of *Siphonophora granaria*, Kirby, a puceron infesting an unknown number of *Graminaceæ*, both wild and cultivated, *Secale*, *Triticum*, *Holcus*, *Poa*, etc. Bignell bred 11 specimens, including both sexes.

18. *Aphidius crepidis*, Haliday.

A. crepidis, Hal., *lib. cit.*, 94; Marsh., *lib. cit.*, p. 581, ♂ ♀.
A. tuberculatus, Wesm., Nouv. Mém. Ac. Brux., 1835; p. 80, ♀ (where the remarkable colour of the valves of the terebra is omitted).

♀ Fulvo-testaceous, head and thorax black above. Head small, contracted posteriorly, hardly transverse; face, oral parts, and apex of the cheeks, testaceous. Antennæ 13-jointed, shorter than the body, black, with the two basal joints and the base of the 3rd, fulvous, which colour is sometimes further extended. On the mesosternum is a large black spot, and another in the middle of the metathorax. The upper portion of the metathorax is occupied by two areæ, leaving between them a right angle, the apex of which reaches the base; this angle forms part of a third area, occupying the middle of the posterior face of the metathorax. Wings hyaline with a cinereous tinge; nervures brown, distinct; stigma elongate, fulvous during life, cinereous in dried specimens; 1st abscissa of the radial nervure curved, originating before the middle of the stigma; cubital nervure continued to the end of the 1st cubital areolet; 1st intercubital nervure half completed. Legs fulvous, sometimes entirely, more commonly the 4 posterior femora and tibiæ (or even those of the forelegs) infuscated on the upper edge; tarsi infuscated. Abdomen lanceolate; 1st segment fulvous, somewhat rugulose, wider than usual, twice as long as broad, with salient tubercles, situated not far from the base; intermediate segments infuscated either on the whole of the disc, or only at the sides. Valves of the terebra testaceous, streaked with black above, exserted, curved downwards and angularly enlarged beneath. ♂ Dissimilar; black; antennæ rather longer than the body, 16-jointed; oral parts fulvous; wings cinereous; legs infuscated, hind coxæ black; abdomen piceous, somewhat spathulate; 1st segment narrow, linear, three times as long as broad, fulvous at the base and sometimes at the extremity also ; a pale patch occupies the 2nd suture and the disc of the 2nd segment. Length, 1 ; exp. 2 lines.

This species is easily recognised by its many small peculiarities ; both sexes may be known at once by the unusual development of the 1st intercubital nervure ; the female also by the structure of the terebral valves, analogous to that which is seen in the genus *Monoctonus.* Haliday procured these somewhat rare parasites by keeping the pucerons which infest *Crepis virens,* hawk's-beard, and *Cichorium intybus,* succory ; and I obtained a fine set from the pucerons of *Lapsana communis,* nipple-wort.

19. *Aphidius pseudoplatani,* Marshall.

A. constrictus, Hal., *lib. cit.*, 95, ♂ ♀ (*nec* Nees).
A pseudoplatani, Marsh., *lib. cit.*, p. 82, ♂ ♀.

♀ More slender than the preceding. Pale whitish yellow ; head and thorax infuscated above ; mesosternum sometimes infuscated. Palpi very long for the genus. Antennæ slender, blackish, with the 4 or 5 basal joints yellow, a little shorter than the body, 16-jointed (rarely 15-jointed). Mesothoracic furrows effaced ; metathorax smooth, faintly carinated and areated. Wings hyaline ; squamulæ and radicles yellowish ; nervures pale brown, distinct ; stigma yellow during life, afterwards pale brown ; cubital nervure continued to the end of the 1st cubital areolet. Legs yellow ; extremities of the 4 posterior femora and tibiæ infuscated on the outer side. First abdominal segment linear, slender, three times as long as broad, with salient tubercles, situated in the middle. Terebra further exserted than that of *crepidis,* its valves yellow, compressed, conic, not angulated beneath, curved downwards at the apex only. ♂ Head and thorax black ; palpi pale brown ; antennæ 18-jointed, black ; squamulæ and radicles brownish ; legs dull testaceous or brownish, base of coxæ, femora, middle of tibiæ, and tips of tarsi, infuscated ; abdomen impure yellowish, clouded with a darker tint, sometimes entirely infuscated after the 1st segment. Length, 1 ; exp. 2 lines.

Bignell has bred 2 ♀s and a ♂ of this species, out of *Drepanosiphum acerinum,* Walk., the puceron of *Acer pseudoplatanus,* the sycamore. The pucerons which were parasitised turned white, and two of them were winged. The Chalcids *Isocratus æneus,* Nees, and *vulgaris,* Walk., are hyperparasites of this Aphidius.

20. *Aphidius dissolutus*, Haliday.

? *Bracon dissolutus*, Nees, Mag. Ges. Berl., 1811, p. 29; *A. dissolutus*, Nees, Mon., i, 23, ♂ ♀.
? *A. resolutus*, Nees, *lib. cit.*, 24, ♂ ♀.
A. dissolutus, Hal., *lib. cit.*, 105; Marsh., *lib. cit.*, p. 583, ♂ ♀.

♀ Black, shining; abdomen piceous, pale at the base. Mandibles and palpi testaceous; the latter short, maxillary 2-jointed, subclaviform, labial consisting of a single joint. Antennæ stout, black, 16-jointed, the 3rd joint pale. Mesothoracic furrows obsolete. Wings narrow, infumated, clearer towards the base; stigma and nervures fuscous, the former narrow. Fore legs almost wholly pale yellowish; so also the 4 posterior coxæ, trochanters, knees, and tarsi, the rest of the legs fuscescent. Abdomen short, oval-lanceolate; 1st segment short, cyathiform, contracted at the base, dilated and almost rectangular posteriorly, somewhat rugulose. Terebra subexserted, with obtuse, black valves. ♂ Antennæ longer, entirely black, 16-jointed, the articulations more distinct than in the ♀; wings of a lighter tint; fore femora and tibiæ infuscated on the outer side; the 4 posterior infuscated, with yellowish knees and tarsi; abdomen not so distinctly pale at the base; 1st segment less dilated. Length, 1; exp. 2 lines.

There are two descriptions of *dissolutus*, one by Nees v. Esenbeck, the other by Haliday, who has assumed the species of the German writer to be the same as his own. The identity, however, seems doubtful for the following reasons, (1) according to Nees the antennæ of the ♀ have only 14 (i.e. 13) joints; (2) Nees is silent as to the peculiarity of the palpi; (3) the cubital nervure is described as effaced at the base, reappearing under the 1st cubital areolet, and then again effaced. There is nothing special in this character, which is found in many more species, often, I think, accidentally, and confined to the individual. It may have appeared a good distinctive character at a time when few species were known, but is certainly not so now. Hence the genus *Lysiphlebus* of Förster, formed (as the name imports) to include the Aphidii with an interrupted cubital, and without regard to any other character, has no certain foundation. The variety indicated by Nees evidently belongs to a different species; and the *A. obsoletus*, Wesmael, which that author refers doubtfully to *dissolutus*, Nees, is nothing else than

Trioxys heraclei, Hal. *A. dissolutus*, Nees, is stated by that author to occur in hedges and oak-plantations; *A. dissolutus*, Haliday, is found, though rarely, in meadows overgrown with *Ranunculus acris.*

21. *Aphidius sonchi*, Marshall.

A. sonchi, Marsh., *lib. cit.*, p. 585, ♂ ♀.

♀ Black ; prothorax, base and apex of abdomen, clypeus, mandibles, and palpi, testaceous. Antennæ slender, filiform, shorter than the body, 16-jointed, the two basal joints and the base of the 3rd testaceous. Mesothoracic furrows obsolete ; metathorax carinated in the middle longitudinally, and crossed lower down by another and transverse carina. Wings hyaline ; squamulæ and radicles testaceous ; stigma colourless ; nervures pale brownish ; all obsolete beyond the stigma ; cubital nervure very weak at its origin, but continued to the end of the first cubital areolet. Legs clear testaceous, including the coxæ. Abdomen lanceolate, as wide in the middle as the thorax ; 1st segment nearly linear, three times as long as broad, clear testaceous, its tubercles placed a little before the middle ; 2nd brownish with a pale patch in the middle reaching to the anterior margin ; 2nd suture bordered on both sides with testaceous ; segments 3–4 brownish, the rest testaceous, sometimes with a brownish spot in the disc of the 5th. Terebra very short, with black, stout, obtuse valves. ♂ Antennæ as long as the body, 18-jointed ; the testaceous portions of the body less clear ; 4 posterior tibiæ and hind femora infuscated ; base of hind coxæ marked with a fuscous spot ; 1st abdominal segment brownish towards the extremity ; 2nd dark brown, leaving the sutures always pale ; after the 2nd suture the abdomen is black. This ♂ resembles so many others that it can hardly be recognised apart from the other sex. Length, 1¼ ; exp. 2½ lines.

Six specimens were reared by Bignell, and eight by myself, from *Siphonophora lactucæ*, Kalt., the puceron of *Lactuca sativa*, lettuce ; but in the present instance this aphis was found infesting *Sonchus oleraceus*, sow-thistle. Hyperparasite, *Allotria minuta*, Hartig.

22. *Aphidius asteris*, Haliday.

A. asteris, Hal., *lib. cit.*, 100 ; Marsh., *lib. cit.*, p. 586, ♂ ♀.

♀ The colours are those of *rosæ* (sp. 10), but not so clear. Head and thorax black ; abdomen impure yellow, with the intermediate segments infuscated. Clypeus and palpi yellowish, the latter infuscated towards the tips. Antennæ slender, entirely black, 15-jointed. Anterior portion of the pectus yellowish. Wings hyaline; squamulæ and radicles obscurely yellowish; stigma impure yellow, becoming brownish after death; nervures brownish. Legs impure yellow; femora streaked above with fuscous, the hind pair almost wholly fuscous; 4 posterior tibiæ infuscated except at the base; tarsi almost wholly infuscated; 4 posterior coxæ black. A yellowish patch on the 2nd abdominal suture. ♂ Black, with the oral parts impure yellow; antennæ 18-jointed; legs brown, fore femora and tibiæ ferruginous beneath; ends of the trochanters, and all the knees, ferruginous; abdomen brown, the 1st segment partly yellow; 2nd suture yellowish. (Haliday.) Length, 1½; exp. 2¼ lines.

Parasite of the pucerons of *Aster tripolium,* sea starwort.

23. *Aphidius ribis,* Haliday.

A. ribis, Hal., *lib. cit.,* 101, ♀; cf. Réaum., Mém., iii, 286; Marsh., *lib. cit.,* p. 587, ♂ ♀.

♀ Blackish, or dark brown; head black; abdomen yellow at both ends. Oral parts yellow. Antennæ fuscous with the two basal joints yellow, 15-jointed. Prothorax yellow; pectus paler than the disc of the thorax. Wings hyaline; squamulæ and radicles yellowish; stigma yellow, becoming brownish after death; nervures pale brownish, mostly subobsolete; cubital nervure interrupted in the middle, reappearing beneath the 1st cubital areolet and one half of the 2nd, then suddenly effaced; 1st cubital areolet indistinctly separated from the discoïdal. Legs yellow, including all the coxæ; tips of femora above, middle of tibiæ, and tarsi at the apex, slightly infuscated. Abdomen yellow; base of the 2nd segment and extremity of the 3rd infuscated, as well as the disc of the following segments except the apical one, which is yellow. Valves of the terebra black. ♂ Antennæ 15–16-jointed, as long as the body, stout, black with the two basal joints pale; prothorax blackish; abdomen after the 1st segment brown to the apex; otherwise like the ♀. Length, ½–¾; exp. 1½–2¼ lines.

This small Aphidius is abundant, attacking *Myzus ribis,* L., the aphis which infests currant-bushes, both red and black, *Ribis rubra* and *R. grossularia,* causing the well-known puckering of their leaves. The pucerons pierced by the parasite become pearly white; they produce the hyperparasite, *Allotria minuta*, Hartig, in such numbers that it is often difficult to procure from them a single Aphidius.

24. *Aphidius cirsii*, Haliday.

A. cirsii, Hal., *lib. cit.*, 101, ♀ (not of Curtis); Marsh., *lib. cit.*, p. 588, ♀.

♀ Prothorax flavo-ferruginous ; head and thorax black or blackish ; abdomen piceous, almost black at the apex, with the 1st segment and two first sutures yellow. Face and clypeus black ; palpi fuscous ; mandibles yellow, infuscated at the points. Antennæ 15-jointed (rarely with 16, and once only with 17 joints, according to Haliday), shorter than the body, the apical joint largest ; they are black, with the two basal joints brownish, the 3rd testaceous, black at the extremity. Mesothoracic furrows obsolete ; metathorax carinated, areated. Wings hyaline, with a dusky tinge ; squamulæ and radicles testaceous ; stigma very pale ; nervures fine but distinct, pale brownish ; cubital complete as far as the end of the 1st cubital areolet. Legs rufotestaceous, coxæ and trochanters paler ; hind coxæ infumated above at the base ; femora and tibiæ of the same pair usually of a deeper red. Abdomen lanceolate, slender, narrower than the thorax ; 1st segment rufotestaceous, slightly widened posteriorly, 2½ times as long as its mean breadth, without distinct tubercles ; the two first sutures and the posterior half of the 2nd segment pale ; the following segments black. Valves of the terebra black. ♂ Unknown. Length, ¾ ; exp. 1¾.

Bignell has reared six females of this species. One came out of *Aphis cardui*, L., infesting *Carduus lanceolatus*, *Pyrethrum maritimum*, and some other plants. Buckton remarks that this *Aphis* is subject to the attacks of a parasite, probably of the present species. On a single stalk of *Pyrethrum*, an inch and a half long, he counted 19 parasitised pucerons. Three more of *cirsii* were produced from *Aphis tanacetina*, Walk., infesting a geranium, and two from an undetermined puceron found on *Galium verum*, ladies' bed-straw. Haliday procured his specimens from *Cirsium arvense*, creeping thistle, but not by breeding.

25. *Aphidius eglanteriæ*, Haliday.

A. eglanteriæ, Hal., *lib. cit.*, 102 ; Marsh., *lib. cit.*, p. 589, ♂ ♀.

♀ Black ; prothorax sometimes ferruginous ; base of abdomen yellow. Oral parts and palpi brownish. Antennæ black, 14–15-

jointed. Legs rufotestaceous, with the outer side of the femora and extremity of the tarsi infuscated; hind coxæ sometimes infuscated. Abdomen piceous, 1st segment rufo-flavous, less frequently brown; middle of the 2nd segment, and anterior sutures, yellowish. ♂ Black; legs brown, the fore pair yellowish beneath; all the knees also yellowish; abdomen darker than that of the ♀. Length, ¾–1; exp. 1½–2¼ lines. Haliday.

Reared by Haliday from pucerons of *Rosa rubiginosa*, sweet-briar; the latter, when pierced, retire to the underside of the leaves, and become shining white.

26. *Aphidius hortensis*, Marshall.

A. hortensis, Marsh., *lib. cit.*, p. 590, ♂ ♀.

♀ Abdomen yellow at base and apex, pale brown in the middle. Face brown; clypeus, mandibles, and palpi, whitish. Antennæ shorter than the body, 14-jointed, blackish with the two basal joints whitish. Mesonotum smooth, without the usual furrows; metathorax faintly carinated, areated. Wings hyaline, with a dusky tint; stigma and nervures pale cinereous; cubital nervure almost effaced, except the portion which forms the lower side of the 1st cubital areolet. Legs yellow, femora and tibiæ of the 4 posterior somewhat infuscated. Abdomen narrow, compressed towards the apex; 1st segment yellow, almost linear, without visible tubercles; 2nd yellow, dusky in the middle, or with a dusky spot on each side; 3 5 somewhat obscure above; the remaining segments yellow. Valves of the terebra black. ♂ Antennæ 16-jointed, as long as the body, the two basal joints of each yellowish; posterior femora and tibiæ darker than those of the ♀; abdomen wholly pale brown, except the 1st segment and the extreme base of the 2nd, which are yellow. Length, 1; exp. 1¾ lines.

The description is from 9 specimens reared from Aphides infesting a shrub, the name of which was not communicated to me, perhaps not indigenous. The punctured pucerons on the same card are pearly white.

27. *Aphidius chrysanthemi*, Marshall.

A. chrysanthemi, Marsh., *lib. cit.*, p. 591, ♂ ♀.

♀ Black; 1st abdominal segment partly pale; oral parts dull testaceous. Antennæ somewhat longer than the head and thorax, rather stout, 14-jointed. Prothorax and pectus black; metathorax carinated in the middle, areated. Wings hyaline; squamulæ radicles, stigma and nervures, pale brownish; 1st section of the cubital nervure faintly traced; the nervure is more distinct beneath the 1st cubital areolet. Legs brown, with the trochanters, base and apex of femora and tibiæ, and base of tarsi, testaceous. Abdomen blackish, the two first sutures narrowly pale; 1st segment linear, without distinct tubercles. ♂ Similar; antennæ 16-jointed; legs darker, and 1st segment paler than in the ♀. Length, 1⅓; exp. 2 lines.

The specimens in the Bignell collection were bred out of *Aphis tanacetina*, Walk., which infests *Tanacetum vulgare*, the tansy, *Chrysanthemum sinense*, the common garden chrysanthemum, and other plants.

28. *Aphidius matricariæ*, Haliday.

A. matricariæ, Hal., *lib. cit.*, 103, ♀; Marsh., *lib. cit.*, p. 592, ♂ ♀.

? *A. restrictus*, Nees, Mon., i, 22; Ratz., Ichn. d. Först., iii, 63, ♀.

? *A. diminuens*, Nees, Mon., i., 22, ♂.

♀ Black; abdomen piceous with the 1st segment ferruginous. Palpi fuscous. Antennæ filiform, 14-jointed, either entirely black, or brownish at the base. Prothorax sometimes ferruginous. Wings hyaline; stigma brownish, very pale; nervures brown; cubital nervure complete as far as the end of the 1st cubital areolet. Legs ferruginous, the fore pair streaked with fuscous above; 4 posterior having their coxæ, femora, tibiæ in the middle, and tarsi at the apex, more or less infuscated. Abdomen lanceolate, rather wide in the middle; 1st segment almost linear, twice as long as broad, its tubercles indistinct, situated in the middle, the colour is very clear, and extends a little on to the 2nd segment, along the median line; the following segments black. Valves of the terebra obtuse. ♂ Similar; antennæ longer, 16–17-jointed; legs darker; abdomen forming a flattened oval, spathulate; 1st segment more slender. Length, ¾–1; exp. 1½–2¼ lines.

Found rarely by Haliday on *Pyrethrum inodorum* and *P. maritimum*. The Bignell collection contains two pairs of this species, produced from *Aphis myosotidis*, Koch, which infests *Polygonum aviculare*, common knot-grass. I have also obtained the ♀ from the pucerons of *Raphanus maritimus*.

29. *Aphidius arundinis*, Haliday.

A. arundinis, Hal., *lib. cit.*, 104; Marsh., *lib. cit.*, p. 592, ♀.

♀ Black or piceous; 1st abdominal segment flavo-ferruginous. Oral parts and palpi of the same colour. Antennæ 14- (or sometimes 15-) jointed, black, with the base yellow. Prothorax flavo-ferruginous. Wings hyaline; squamulæ and radicles stramineous; stigma almost hyaline; nervures for the most part colourless; cubital nervure colourless, scarcely perceptible beneath the 1st cubital areolet. Legs flavo-ferruginous. Haliday had before him some specimens, probably immature, in which the black parts were replaced by brownish red, and the scutellum was red; but he regarded them as belonging to the same species. ♂ Unknown. Length, ¾; exp. 1½ lines.

This species was doubtfully referred in the Catalogue of 1872 to *matricariæ* and *restrictus* (sp. 28); but such a conjecture should not perhaps have been made without more information. The insect has never been bred by any one, and its description leads to no certain conclusion.

Found by Haliday upon reeds, but not common.

30. *Aphidius cardui*, Marshall.

A. cardui, Marsh., *lib. cit.*, p. 593, ♂ ♀.

♀ Head and thorax black; abdomen subsessile, brown, with the 1st segment and the base of the 2nd whitish yellow. Clypeus, mandibles, and palpi very pale, somewhat rufescent. Antennæ 12-jointed, rather larger than the head and thorax, stout, submoniliform, black, with the two or three basal joints pale rufous, the apical joint elongate and larger than the rest. Prothorax often testaceous beneath; mesonotum without furrows; metathorax rufescent, smooth, without a median carina, and not areated. Wings hyaline; squamulæ, radicles, stigma, and nervures pale brownish, these last tolerably distinct, except the cubital, which is effaced as to its first section, reappearing only to form the lower side of the 1st cubital areolet. Fore legs testaceous; the 4 posterior brownish, with coxæ, trochanters, and knees, pale testaceous. Abdomen rather longer than the head and thorax, lanceolate, slightly compressed at the apex; 1st segment short, not more than twice as long as its mean breadth, linear as far as the tubercles, which are situated before the middle, from thence widened to the extremity, which is twice as broad as the base; posterior segments gradually becoming darker to the apex which is nearly black. Valves of the terebra black. ♂ Similar;

antennæ almost as long as the body, entirely black, 14-jointed. Length, $\frac{2}{3}$; exp. $1\frac{1}{2}$ lines.

A common parasite, reared in numbers by Bignell from *Aphidius cardui*, L., on *Carduus lanceolatus*; from *Siphonophora olivata*, Buckton, also infesting thistles; from *Aphis jacobæa*, Schr., on *Senecio jacobæa*, common rag-wort; and from *Siphocoryne capreæ*, Fab., a puceron inhabiting different kinds of willow.

31. *Aphidius salicis*, Haliday.

A. salicis, Hal., *lib. cit.*, 102; Marsh., *lib. cit.*, p. 594, ♂ ♀.

♀ Black, with a pale patch on the abdomen; 1st segment sometimes brown. Oral parts dull yellow. Antennæ a little longer than the head and thorax, slightly incrassated towards the apex, 13-jointed. Wings hyaline; stigma yellowish, becoming brownish after death; nervures paler brown; lower side of the 1st cubital areolet complete. Four anterior legs dull ferruginous; 2nd pair with the base of their femora, the middle of the tibiæ, and the tarsi, infuscated; hind pair brown, with the trochanters and both ends of the tibiæ ferruginous; all the coxæ black. Second abdominal segment pale in the middle; the two first sutures also pale; or the abdomen shows in the middle an indeterminate pale patch. ♂ Antennæ 15–16-jointed (rarely with 17 joints); wings whitish; legs and abdomen darker brown than in the ♀. Length, $\frac{3}{4}$–1; exp. $1\frac{1}{2}$–2 lines. Haliday.

Like the preceding, this species attacks some of the pucerons of the willow; those that are wounded may be recognised by their pale brown colour; they retire to the extremities of the leaves. The majority of them nourish, beside the *Aphidius*, an *Allotria* with a red head (*fulviceps*, Curtis), or some other species which cannot now be determined. Haliday observed also some still smaller species of *Aphidius* on *Daucus carota*, the carrot, which seemed to him to be *A. salicis*. But see no. 38, *A. dauci*.

32. *Aphidius exiguus*, Haliday.

A. exiguus, ♂ Hal., *lib. cit.*, 104, ♀; Marsh., *lib. cit.*, p. 595, ♂ ♀.
? *A. fumatus*, Hal., *lib. cit.*, ♂.

♀ Black; abdomen pale at the base and in the middle; 1st segment yellow. Oral parts ochreous. Antennæ a little longer than the head and thorax, slightly incrassated towards the apex, 13-jointed. Wings obscure; stigma pale brownish; 1st cubital areolet indistinctly limited on the lower side. Legs piceous, with pale knees. First abdominal segment almost linear, but slightly widened posteriorly. Valves of the terebra obtuse. ♂ The doubtful male (*fumatus*, Hal.) resembles *Monoctonus caricis*, Hal. Blackish brown, with very short palpi; antennæ a little incrassated, 16-jointed; wings infumated; stigma narrow; 2nd abscissa of the radius somewhat arcuate; 1st cubital areolet indistinct or effaced; legs piceous, with pale knees and tarsi; abdomen brownish, pale at the base, dilated, spathulate; 1st segment stout, linear. Length, ⅝; exp. 1¼ lines, nearly.

The association of the sexes is almost always doubtful, unless they have been reared together; in the present case I have joined *fumatus* to *exiguus* agreeably to a conjecture of Haliday. The insects are unknown to me, unless a ♂ which I captured at large should happen to be *fumatus*; it agrees pretty well with the diagnosis. *Exiguus* and *fumatus* both occur not uncommonly in marshy meadows, overgrown with *Ranunculus acris.*

33. *Aphidius scabiosæ*, Marshall.

A. scabiosæ, Marsh., *lib. cit.*, p. 596, ♂ ♀.

♀ Head and thorax black above, all the underside of the body pale yellow or whitish; abdomen pale yellow, brownish in the middle. Face, clypeus, and palpi of the same pale colour. Antennæ rather shorter than the body, 15-jointed, blackish, with the two basal joints of each yellow. Mesothoracic furrows obsolete; metathorax carinated in the middle, areated. Wings hyaline; cubital areolets and 1st discoïdal effaced, no nervures visible beyond the stigma, or scarcely a trace of them remains; stigma very pale, decolorous. Legs pale yellow, coxæ and trochanters whitish. Abdomen lanceolate, very little compressed towards the apex; 1st segment pale yellow, linear, narrow, without visible tubercles; 2nd pale brownish, yellow in the middle of the base, or yellow with a dusky spot on each side; 3rd and 4th brownish; 5th yellow, more or less brownish posteriorly; 6th with only a small brownish spot at the extremity; apical segment yellow. Valves of the terebra blackish. ♂ Antennæ as long as the body, 17-jointed; 4 posterior femora and tibiæ stained with reddish brown; abdomen rounded at the apex, entirely brownish above, after the 1st segment. Length, 1; exp. 2 lines.

In coloration this resembles *asteris* (sp. 22) and *hortensis* (sp. 26), but its other characters render it sufficiently distinct. Parasite of *Aphis scabiosæ*, Kalt., which infests *Scabiosa arvensis*. Bignell reared 29 specimens, and observed others, which he thought were of the same species, on the blossoms of *Ballota nigra*, stinking horehound.

34. *Aphidius leucopterus*, Haliday.

A. leucopterus, Hal., *lib. cit.*, 103; Marsh., *lib. cit.*, p. 597, ♂ ♀.

♀ Deep black, shining; 1st abdominal segment dark brown. Antennæ black, slender, 15-jointed. Wings whitish; stigma yellow. Fore legs yellowish; 4 posterior blackish brown, with the trochanters, the base of the tibiæ and of the tarsi pale. A pale patch in the middle of the disc of the abdomen. Terebral valves angulated at the base above, acute at the extremity. ♂ Antennæ 16-jointed; wings white; all the legs blackish brown, annulated with pale colour; abdomen black, the pale patch in the middle less distinct. Length nearly ¾; exp. 1½ lines. Haliday.

Förster in his Synopsis (p. 249) has made of this species a genus *Diæretus*, for which he indicates two characters not mentioned by Haliday, viz., metathorax not areated, and pobrachial nervure perceptible. The former peculiarity is shared by several other known species of *Aphidius*; the latter is rather a distinction of individuals, and certainly not of generic value. The present insect is unknown to me, and found rarely, according to Haliday, on coniferous trees.

35. *Aphidius brassicæ*, Marshall.

A. brassicæ, Marsh., *lib. cit.*, p. 597, ♂ ♀.

♀ Black; abdomen brown, with the 1st segment more or less pale towards the base, and the two first sutures pale. Oral parts and palpi pale. Antennæ short, reaching backwards as far as the end of the 1st segment, black, with the extremity of the 2nd joint testaceous, 14-jointed. Mesothoracic furrows obsolete; metathorax carinated, areated. Wings hyaline; squamulæ, radicles, and basal nervures dull testaceous; stigma pale yellowish; cubital areolets and 1st discoïdal effaced; no visible nervures beyond the stigma. Fore legs testaceous, their femora sometimes streaked with fuscous; 4 posterior fuscous, with the extremity of the coxæ, the 2nd joint of the trochanters, the extremity and the underside of the femora, and the base of the tibiæ, dull testaceous; tarsi infuscated, each articulation pale at the base. Abdomen lanceolate; 1st segment linear, three times as long as wide, without distinct tubercles, pale testaceous at the base, fuscous at the extremity; 2nd fuscous, pale at both ends; the rest of the segments fuscous. Valves of the terebra black. ♂ Similar; antennæ almost as long as the body, 17-jointed; colours darker than those of the ♀, even the forelegs are infuscated, or streaked with fuscous above; abdomen elongate oval, rounded at the apex. Length, 1; exp. 2 lines.

A common parasite; I obtained six specimens, comprising the two sexes, from *Siphocoryne fœniculi*, Passerini, the puceron of *Fœniculum vulgare*, fennel, and Bignell sent me a male of the same origin. Thirteen others were reared from the pucerons of *Raphanus maritimus*, the stalks of which plant were loaded with dead aphides. The Bignell collection possesses more than forty specimens, the produce of *Aphis brassicæ*, L., the puceron of *Brassica oleracea*, the cabbage, and of some other kindred plants. *Trionyx* (i.e. *Toxares*, afterwards *Aphidius*) *rapæ*, Curtis, probably belongs to this species.

36. *Aphidius fabarum*, Marshall.

A. fabarum, Marsh., *lib. cit.*, p. 599, ♂ ♀.

♀ Head and thorax black; abdomen dull testaceous as far as the middle, the two basal segments infuscated on the disc, the apical half black. Head rather larger than the thorax; oral parts and palpi pale brownish. Antennæ 12-jointed, filiform, stout, shorter than the body, black with the two basal joints brown, the apical joint formed of two closely united. Mesonotum finely punctulate in front, smooth posteriorly, as also are the scutellum and the metathorax, this last destitute of a median carina. Wings hyaline; squamulæ and radicles pale brownish; stigma hyaline, except a small patch of colouring matter in the middle (in my specimen); basal nervures brown, distinct, the rest effaced, except a faint trace of the radial; even the 2nd discoïdal areolet is subobsolete, open on the underside. Fore legs testaceous; the 4 posterior the same, but with a brown streak on the femora above, and the tibiæ brown in the middle; hind coxæ brownish. Abdomen not longer than the head and thorax, lanceolate, as wide in the middle as the thorax; 1st segment unusually stout, much widened posteriorly, where it is twice as broad as at the base; tubercles median; 2nd pale brownish, testaceous at both ends; the rest of the abdomen black; the apex acute; hypopygium prominent. Valves of the terebra broad, conic, black. ♂ dissimilar; antennæ composed of 13 joints, whereof the two apical ones are discrete; almost moniliform, brownish at the base; stigma hyaline, immaculate; radial nervure more distinct; abdomen much narrower; 1st segment narrow, linear, margined, suddenly contracted at the extremity; the testaceous colour of the two basal segments more obscure; posterior part of the abdomen narrow, oblong, sublinear, rounded at the apex. ♀ Length, $\frac{3}{4}$; exp. $1\frac{3}{4}$: ♂ length, $\frac{5}{8}$; exp. $1\frac{1}{2}$ lines.

I obtained the two sexes out of *Aphis rumicis*, L., a polyphagous puceron inhabiting *Rumex crispus*, the curled dock, and many other plants: found in the present case on *Faba vulgaris*, the broad bean.

37. *Aphidius ambiguus*, Haliday.

A. ambiguus, Hal., *lib. cit.*, 104; Marsh., *lib. cit.*, p. 600, ♀.

♀ Abdomen subsessile, 1st segment short, cyathiform. Antennæ filiform, black, longer than the head and thorax, 13-jointed. Wings hyaline; stigma pale brown; cubital areolets and exterior nervures obsolete. Legs pale yellow, coxæ and tarsal claws infuscated; the 4 posterior legs have the middle of the femora and tibiæ, and the apex of the tarsi infuscated. Abdomen short, oval, lanceolate, pale at the base, piceous posteriorly; tubercles of the 1st segment visible. Valves of the terebra acute. ♂ Unknown. Length, $\frac{5}{8}$; exp. $1\frac{1}{4}$ lines. Haliday.

Found rarely in marshy places.

38. *Aphidius dauci*, Marshall.

A. dauci, Marsh., *lib. cit.*, p. 601, ♂ ♀.

♀ Head and thorax black, abdomen brown, with the 1st segment testaceous. Clypeus black; mouth and palpi either dull testaceous or brownish. Antennæ 13-jointed, scarcely longer than the head and thorax, 1st and 2nd joints brown, base of the 3rd pale. Mesonotum without furrows, but these are sometimes indicated by two slight longitudinal depressions; metathorax carinated, areated. Wings hyaline; squamulæ and radicles pale; stigma hyaline, hardly tinged with yellow; basal nervures tolerably distinct, brownish testaceous; 2nd cubital areolet effaced, or only a trace of its lower side remains ; radial nervure hardly visible, as long as the stigma, the rest of the neuration effaced. Fore legs testaceous, their coxæ infuscated ; 4 posterior brown, with the ends of the coxæ, the trochanters, and the knees, testaceous, as well as the base of the hind tarsi. Abdomen slender, subcylindric, longer than the head and thorax, lanceolate, somewhat compressed from and after the base of the 2nd segment ; 1st segment testaceous, linear, three times as long as broad, with scarcely perceptible tubercles situated in the middle ; 2nd segment brown, testaceous at both ends along the sutures ; the rest of the abdomen brown, becoming black towards the apex. Valves of the terebra black. ♂ Similar ; antennæ 15–16-jointed, a little shorter than the body ; fore legs brownish, the 4 posterior, and the abdomen, darker than in the ♀. Length less than ½ ; exp. 1¼ lines.

This minute species is perhaps the one mentioned by Haliday as a var. of *salicis* (sp. 31). After examining a great number of both species, I have no hesitation in keeping them apart. *A. dauci* is a parasite of *Siphonophora pastinacæ*, which infests *Pastinaca sativa*, the parsnip, and *Apium graveolens*, wild celery. The Bignell collection contains a series bred out of the same pucerons, but taken on *Daucus carota*, the carrot, and *Crithmum maritimum*, samphire.

39. *Aphidius polygoni,* Marshall.

A. polygoni, Marsh., *lib. cit.*, p. 602, ♂ ♀.

♂ Black, with only the two first sutures pale. Oral parts and palpi testaceous. Antennæ 13-jointed, hardly longer than the head and thorax, black with the base of the 3rd joint testaceous. Mesothoracic furrows obsolete ; metathorax carinated, areated. Wings hyaline with a cinereous tinge ; squamulæ, radicles, stigma and neuration cinereous brown ; basal nervures distinct ; no cubital nervure ; cubital areolets and first discoïdal effaced. Fore legs testaceous, femora fuscous above, tibiæ in the middle, and tarsi altogether, except the base ; 4 posterior legs black, with the extremities of the coxæ, the 2nd joint of the trochanters, the knees, and the base of the tarsi, testaceous ; 1st joint of the trochanters brown. Abdomen twice as long as the head and thorax, lanceolate ; 1st segment a little wider at the apex than at the base, 2½ times longer than its mean breadth, yellowish at both ends, brown in the middle ; tubercles hardly visible, situated in the middle. Valves of the terebra stout, truncate at the apex. ♂ Black, with the two sutures pale, translucid; palpi black; antennæ rather shorter than the body, 15-jointed, black. Legs black. Length, 1; exp. 2 lines.

Bred by Bignell out of *Aphis myosotidis*, Koch, found infesting *Polygonum aviculare*, common knot-grass.

II. Males whose Females are unknown.

40. *Aphidius silenes*, Marshall.

A. silenes, Marsh., *lib. cit.*, p. 603, ♂.

♂ Black; pectus rufescent; abdomen piceous, with the 2nd suture pale, 1st segment black posteriorly. Clypeus, palpi, and mandibles pale brown. Antennæ stout, 20–21-jointed, longer than the body, black, with the two basal joints brownish, the 3rd testaceous at the base; joints 3–6 angulated on the outer side, subserrate, the rest nearly filiform. Mesothoracic furrows faintly indicated; metathorax carinated, areated. Wings hyaline; squamulæ and radicles dull testaceous; stigma narrow, hyaline or hardly yellowish; nervures pale brownish; 2nd cubital areolet closed on the underside by a very fine nervure, hardly visible, *i.e.* cubital nervure about half completed. Legs testaceous; femora and tibiæ of the 4 posterior bifuscated; coxæ, trochanters, and base of the tibiæ, pale; hind coxæ infuscated at the base; a second specimen has the legs pale testaceous with the hind femora streaked with fuscous above. Abdomen claviform, somewhat longer than the head and thorax; 1st segment linear, margined, without visible tubercles. Length, 1¼; exp. 2½ lines.

Parasite of *Siphonophora pisi*, Kalt., the puceron of different species of pea, *Pisum arvense*, *sativum*, etc., also of *Silene inflata*, bladder campion, and other plants. Reared by Bignell.

41. *Aphidius crithmi*, Marshall.

A. crithmi, Marsh., *lib. cit.*, p. 604, ♂.

♂ Black; abdomen piceous, with the extremity of the 2nd segment, and the 2nd suture, pale. Palpi brown. Antennæ 19-jointed, black, setiform, not longer than the body. Mesothoracic furrows faintly indicated: metathorax smooth, carinated in the middle, areated. Wings hyaline; squamulæ, radicles, and nervures pale brownish; stigma, yellowish, elongate, emitting the 1st abscissa of the radius obliquely, before the middle; 2nd and 3rd abscissæ effaced; cubital nervure continued as far as the end of the 1st cubital areolet, the under side of which is distinctly incrassated. Legs brown; trochanters, knees, and base of tarsi, testaceous. First abdominal segment linear, black, rugulose, with scarcely perceptible tubercles placed near the extremity. Length, 1; exp. 2½ lines.

Reared by Bignell out of *Aphis crithmi*, Buckton, which inhabits the samphire, *Crithmium maritimum.*

42. *Aphidius absinthii*, Marshall.

A. absinthii, Marsh., *lib. cit.*, p. 605, ♂.

♂ Black; abdomen piceous, the 1st segment pale testaceous. Oral parts and palpi very pale, whitish. Antennæ 17-jointed, as long as the body, black, with the two basal joints piceous. Mesothoracic furrows obsolete; metathorax reddish-brown, carinated in the middle, divided into four areæ. Wings slightly cinereous; squamulæ and radicles impurely whitish; stigma very pale, cinereous; basal nervures brownish, tolerably distinct, the rest effaced, except the radial, which advances as far as the middle of the stigma, and the cubital, which is visible beneath the 1st cubital areolet. Legs blackish; trochanters and knees testaceous. Abdomen somewhat longer than the head and thorax; 1st segment linear, with minute tubercles, situated before the middle; 2nd suture and base of the 2nd segment pale testaceous, the rest of the abdomen dark. Length, ½; exp. 1⅓ lines.

Bred by Bignell from *Siphonophora absinthii*, L. the puceron of *Artemisia absinthium*, wormwood.

43. *Aphidius euphorbiæ*, Marshall.

A. euphorbiæ, Marsh., *lib. cit.*, p. 606, ♂.

♂ Head and thorax black; 1st segment testaceous at the base, reddish on the condylus, two first sutures testaceous, the rest of the abdomen piceous; tubercles situated after the middle of the 1st segment. Oral parts rufescent; palpi darker. Antennæ 18-jointed, stout, black, as long as the body. Prothorax piceous; mesothoracic furrows effaced; metathorax carinated, areated. Wings subhyaline; squamulæ, radicles, and stigma, cinereous; basal nervures brownish; cubital almost effaced, only a faint vestige appearing beneath the 1st cubital areolet. Legs piceous, the hind pair nearly black; trochanters and knees testaceous. Abdomen as long as the head and thorax; 1st segment linear, at least three times as long as broad; tubercles minute. Length, $\frac{3}{4}$; exp. $1\frac{3}{4}$ lines.

Two males were reared by Bignell out of a species of aphis found on *Euphorbia paralias*, the sea-spurge. This aphis is perhaps *Aphis euphorbiæ* of Koch and Kaltenbach, but I find no mention of it in Buckton's monograph. The ♂ *Aphidius* corresponds very closely with the ♀ of sp. 19, *pseudoplatani*, but there can be no proof of their relationship without breeding, and considering the difference of their origin, I have not united them.

44. *Aphidius lychnidis*, Marshall.

A. lychnidis, Marsh., *lib. cit.*, p. 607, ♂.

♂ Blackish brown, paler on the abdomen; the 1st segment yellow. Oral parts and palpi very pale brown. Antennæ 16-jointed, as long as the body, piceous, the 2nd joint rufescent. Mesothoracic furrows effaced. Wings subhyaline; stigma and nervures very pale, the latter indistinct; radial nervure forming no angle, shortened; cubital effaced; præbrachial transverse more distinct than the rest; 2nd discoïdal areolet longer than half the præbrachial transverse; apical third of the wing entirely nerveless. Legs fusco-testaceous, including the coxæ; 4 posterior femora, tibiæ, and tarsi, infuscated, except at the base. Abdomen elongate, narrowly oval; 1st segment linear, its tubercles imperceptible; extreme base of the 2nd yellow, like the 1st. Length nearly 1; exp. 2 lines.

Parasite of *Aphis lychnidis*, L. which infests *Lychnis viscaria*, *diurna*, and *vespertina*, campion.

45. *Aphidius cerasi*, Marshall.

A. cerasi, Marsh., *lib. cit.*, p. 607, ♂.

♂ Black, with the 1st abdominal segment testaceous; a long, pale, irregular patch extends over the following segments. Oral parts and palpi pale. Antennæ rather longer than the body, slender, filiform, 16-jointed, black, with the two basal joints brownish. Mesothoracic furrows effaced; metathorax very short, divided into 4 areæ by two carinæ in form of a cross. Wings with a slight dusky tinge ; squamulæ, radicles, and basal nervures very pale brown ; no vestige of the exterior nervures, except the 1st abscissa of the radial ; stigma hyaline, elongate, indeterminate on the under side, emitting the shortened radial from before the middle ; 2nd discoïdal areolet shorter than half the præbrachial transverse ; wings more ample than usual. Legs testaceous ; 4 posterior femora and tibiæ slightly infuscated in the middle, hind coxæ infuscated above at the base. Abdomen as long as the head and thorax, and narrower than the latter ; condylus of the 1st segment somewhat enlarged ; tubercles visible, placed before the middle ; the decolorous patch on the posterior segments is perhaps no character, but an accident resulting from desiccation. Length, ½ ; exp. 1¾ lines.

I reared this species out of *Myzus cerasi*, F. the black puceron of the cherry. Only one specimen was obtained from a number of pucerons, all the rest of these being parasitised in the second degree by the Cynipid *Allotria flavicornis*, Hartig.

46. *Aphidius acalephæ*, Marshall.

A. acalephæ, Marsh., *lib. cit.*, p. 608, ♂.

♂ Head and thorax black ; abdomen piceous, with the 1st segment and the two sutures pale. Head large ; oral parts and palpi pale. Antennæ 13-jointed, stout, longer than the body, somewhat moniliform, black, with the two basal joints brown. Mesothoracic furrows not entirely effaced ; an additional longitudinal channel is traced between the two. Scutellum and metathorax somewhat piceous, the latter convex, smooth, without carinæ or areæ. Wings hyaline ; squamulæ, radicles, stigma, and nervures pale cinereous ; basal nervures attenuated, indistinct ; 1st cubital areolet open on the under side, and so effaced. Legs fuscescent ; trochanters and knees pale. Abdomen as long as the head and thorax, and narrower than the latter ; 1st segment stramineous, three times as long as broad, linear, with minute tubercles before the middle. Length, ⅜ ; exp. 1 line nearly.

Found by Bignell, once only, on a nettle ; the smallest species known.

47. *Aphidius callipteri*, Marshall

♂ Head and thorax black ; abdomen piceous, with the 1st segment yellowish white. Oral parts and palpi testaceous. Antennæ

13-jointed, as long as the body, blackish, with 3 or 4 of the basal joints pale brownish. Mesothoracic furrows obsolete ; metathorax carinated in the middle. Wings hyaline ; squamulæ and radicles dull testaceous ; stigma hyaline, slightly cinereous ; basal nervures brownish, very fine ; exterior nervures effaced. Fore legs pale testaceous, their femora and tibiæ streaked above with fuscous ; 4 posterior fuscescent ; hind coxæ, trochanters, and knees, pale brownish. Abdomen spathulate, as long as the head and thorax ; 1st segment linear, 2½ times as long as broad, almost white, its tubercles situated before the middle ; 2nd and following segments piceous, with the 2nd suture and a median line on the 2nd segment pale. Length, ½ ; exp. 1¼ lines.

Reared once by Bignell out of *Callipterus quercus*, Kalt., one of the pucerons of the oak, *Quercus robur*.

DOUBTFUL SPECIES.

Two more species belonging to this genus have been published as British, but my attempts to verify them have not been successful. Their descriptions are here reproduced for the sake of completeness. That the number of indigenous *Aphidii* vastly exceeds the 47 above described, there can be little doubt. I possess a great quantity taken promiscuously in the course of years, but the mere description of their external appearance, without those facts of their economy which alone can give some interest to such a subject, and in the impossibility of correctly pairing the sexes, would be both illusory and wearisome.

Aphidius lutescens, Haliday.

A. lutescens, Hal., Ent. Mag., ii. 99 ; Marsh., Species des Hym. d'Eur. et d'Algér. Bracon., vol. ii, p. 614, ♀.

♀ Yellow ; eyes and antennæ black, scape yellowish ; vertex, 3 spots on the mesonotum, scutellum, metathorax, 1st abdominal segment, and transverse spots on some of the following segments, infuscated. Legs entirely yellow. Size and proportions of *A. rosæ* (sp. 10) ; cf. *loniceræ* (sp. 11). ♂ Unknown. Length, 1½ ; exp. 3 lines.

The author adds, in a note: "I should have been inclined to consider this as an immature variety of *A. rosæ* but that individuals of this last have assumed their characteristic tints before they are disclosed from the puparium."

Aphidius rapæ, Curtis.

A. (*Trionyx*) *rapæ*, Curt., Farm. Ins., 73; cf. McIntosh, Book of the Garden, ii, 194, fig.; Marsh., *lib. cit.*, p. 615, ♀.

Sex not stated, but the figure represents a ♀. Head and thorax black, shining, abdomen piceous, with pale sutures; 1st segment yellowish. Oral parts yellow. Antennæ shorter than the body, 14-jointed, the 1st joint yellow beneath; according to Buckton they are 16-jointed, and I counted the same number in the specimen sent to me, which was a ♀. Wings hyaline; stigma narrow, brown; costal areolet complete; cubital nervure extending to the end of the 1st cubital areolet; radial nervure inchoate; the rest of the neuration effaced. Legs yellow, diversified with fuscous. Abdomen lanceolate. ♂ Unknown. Length, 1¼; exp. 2⅓ lines.

Curtis himself, as stated in the Book of the Garden, perceived that his insect did not belong to the genus *Trionyx* (i.e. *Toxares*), and the figure there given clearly represents an *Aphidius.* The same is true of the coloured figure in Buckton's Monograph of the Aphidæ. Mr. Buckton obligingly sent me a specimen of the insect to serve as a type; but this was a microscopic preparation, colourless, and flattened between two pieces of glass; it was therefore only serviceable in showing the genus. According to Curtis this parasite destroys the pucerons of *Brassica rapa,* the turnip; and we are informed, in Buckton's work, that the latter belong to the species *Aphis brassicæ,* L. The same aphis attacks several kinds of cruciferous plants, especially *Brassica oleracea,* the cabbage; the vermin which swarm upon the leaves of this plant are often considerably thinned, even to the extent of nine tenths, by parasites. It will be noticed that there are indications of a mixture of two species, with similar habits, in the published accounts of *A. rapæ.* The individuals with 14-jointed antennæ may possibly belong to *A. brassicæ* (sp. 35); as to the others, with 16-jointed antennæ, I can offer no opinion.

VII. DYSCRITUS, Marshall.

Marsh., *lib. cit.*, p. 617.

Head semicircular above, hardly wider than the thorax, somewhat flattened, much produced behind the eyes ; occiput not margined ; clypeus not discrete from the face, closing the mouth. Palpi short. Antennæ inserted in the upper part of the face, slender, filiform, as long as the body ; 3rd joint twice as long as the 4th. Mesothoracic furrows complete ; a smooth foveola before the scutellum ; mesopleuræ smooth, their furrow obsolete ; metathorax short, truncate posteriorly, areated, the disc slightly inclined, separated from the posterior declivity by a transverse carina ; 5 areæ are distinguishable, 2 basal, separated by a carina, a postero-median complete, pointed at the base, and one on each side of the vertical portion. Wings ample, having the neuration of *Praon*, except that the 1st cubital areolet is confounded with the 1st discoïdal ; basal nervures distinct, exterior nervures subobsolete ; no intercubital nervures, so that there is but a single cubital areolet ; stigma rather large, triangular, attenuated at both ends, emitting the radius from the middle ; the latter gently curved without any angle, reaching the tip of the wing, dark and distinct for one third of its length, afterwards very fine and hardly visible to the extremity ; cubital nervure very fine ; recurrent nervure very oblique ; anal nervure not interstitial : 2nd discoïdal areolet incompletely closed at both ends. Abdomen sessile, as long as the head and thorax, strongly compressed posteriorly from the base of the 3rd segment ; 1st segment rectangular, longer than broad, with well developed tubercles placed in the middle ; viewed sideways, the abdomen is claviform and flattened. Terebra very short, its valves stout.

The insect which is here introduced differs from *Praon* by the unusual form of the head, the confluence of the 1st cubital and 1st discoïdal areolets, the complete areation of the metathorax, and the strong compression of the abdomen. Although the habits of the single species, and the corresponding male, are unknown, I have no hesitation in joining it to the Aphidian group ; its external forms indeed forbid any other allocation.

Dyscritus planiceps, Marshall, *l. c.*

♀ Flavotestaceous ; stemmaticum, dorsum of the thorax and of the abdomen in the middle, fuscous. Smooth, shining. Mandibles blackish at the points; middle of the occiput black; palpi yellow. Antennæ 24-jointed, the first five joints yellow, the rest black, the 3rd and 4th narrowly black at the extremity; the 5th less clearly yellow than those preceding it. Prothorax yellow; mesonotum blackish on the 3 lobes, rufescent near the scutellum, in the middle; the latter also rufescent, convex, forming an elongate triangle; metathorax brownish at the base, the posterior declivity and the sides testaceous; it is feebly quadridenticulate posteriorly. Wings hyaline; squamulæ pale yellow; nervures brownish; stigma yellowish; radial areolet ample, elongate-oval, reaching the tip of the wing, [but at first sight appearing incomplete, owing to the tenuity of the radial nervure. Legs yellow; tips of the tarsi fuscous. First abdominal segment yellowish, with a median rugulose elevation, which is infuscated; 2nd and following segments yellowish, 3–5 surmounted by a large, common, piceous patch; apical segments yellow. Valves of the terebra black. ♂ Unknown. Length, 1¼; exp. 3 lines.

A single specimen was taken by Bignell in the neighbourhood of Plymouth.

VII. PACHYLOMMATIDÆ.

This division was omitted in Trans. Ent. Soc. 1885, p. 11, as not belonging to the Braconidæ. I possessed at that time no specimens, and relied upon the opinions of some of the best authorities in excluding the single and remarkable genus *Pachylomma* from the subject of these papers. The history of the genus shows how crucially it has tested the discretion of systematists, and what different situations have been assigned to it by some of the most eminent writers on entomology. De Brebisson, the author of the genus, referred it to the *Ichneumonidæ*: Latreille, Westwood, and Haliday, placed it among the *Evaniidæ*: Förster, Curtis, Ratzeburg, Nees v. Esenbeck, Brullé, Giraud, Ashmead, and Haliday himself (in his later writings), united it to the Braconidæ. There appears then to be a preponderance of testimony in favour of this last opinion, which induces me to introduce *Pachylomma* in this place as a supplementary group, remarking at the same time that its association with any one of the three families is not wholly free from objections, some of which may here be briefly stated:

From the *Ichneumonidæ* it is distinguished by wanting the 2nd recurrent nervure (an essential and invariable character of that family), and by the insertion of the abdomen somewhat above the hind coxæ: from the *Evaniidæ*, by almost every character available for classification, except the insertion of the abdomen, which character however is but feebly represented: from the *Braconidæ*, by the neuration, nothing similar to which is found in the entire family, and by the structure of the abdomen, in which the 2nd suture is diarthrodial or penetrating, as in the *Ichneumonidæ*. Lastly, the insects composing the genus *Pachylomma* are parasites of ants, in which habit there is nothing to show an affinity to one more than another of the above-mentioned families,—except only the case of *Elasmosoma* among the *Braconidæ*, also parasitic upon ants, but totally different in external structure.

It is not worth while to multiply objections, which it would be easy to do; enough has been stated to show that *Pachylomma* represents a very small isolated group, having no near relation to any other parasitic Hymenoptera. The connecting links have been lost in long ages, through some obscure causes which oppose unfavourable conditions to the propagation of certain forms. Several of these abortive offshoots from the primitive type are well known in other orders of insects, and among the Hymenoptera occur some of the most conspicuous; such are * *Stephanus*, *Monomachus*, *Pelecinus*, *Elasmosoma*, etc., whose position in any artificial system has always been, and must continue to be, based upon fanciful analogies, or altogether indeterminate.

Two species only of the *Pachylomma*-group are at present known in Europe, one of which occurs in the British islands. In America three more have been made known by Provancher and Ashmead, viz. *Eupachylomma rileyi*, Ashm., *E. flavocincta*, Ashm., and *Ropronia pediculata*,

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* Nees v. Esenbeck commences his monograph of the *Braconidæ* with the genus *Stephanus*. This genus is now regarded as a separate family. *Stephanidæ*, to which Schletterer has lately added *Stenophasmus*, Westw., a genus taken from the *Braconidæ*, and allied to *Spathius*, of which it has all the forms, with exaggeration, and a neuration absolutely identical, but widely different from that of *Stephanus*. The result of this is that the group of *Spathius* enjoys a double representation, figuring among the Braconidæ as *Spathius*, and among the *Stephanidæ* as *Stenophasmus*.

Prov. These insects, or at least two of them, differ materially from those of Europe by their habits, being parasites of Aphides; *flavocincta* is of unknown origin. It is therefore not without reason that the transatlantic entomologists have regarded them as generically distinct from *Pachylomma.* This genus, to which our attention must now be confined, has been treated as a near relation of *Aphidius*, and this idea seems based upon the fact that two of the American insects just mentioned are parasites of pucerons, resembling in that single respect the extensive tribe represented by *Aphidius.* Notwithstanding similarity of parasitism, which by itself is plainly insufficient to prove affinity, I venture to think that, in comparing *Pachylomma* with *Aphidius*, authors have suffered themselves to be misled by a merely illusory resemblance. Admitting that, at first sight, the general form of *Pachylomma* may possibly suggest that of an Aphidian, yet a closer inspection of structural details must lead immediately to the abandonment of the idea. An ordinary lens, applied to a *Pachylomma*, reveals the following primary characters: oral parts produced into a rostrum; wings equipped with a complete neuration, not only different from that of *Aphidius*, but from that of all other Hymenoptera; the insertion of the abdomen upon the metathorax, faintly suggestive of the structure of *Evania*; the articulation between the 2nd and 3rd segments, which is effected by imbrication, and not by juxtaposition; finally, the form of the hind legs, elongate, with lengthened coxæ and incrassated tarsi. These peculiarities constitute a distinct facies, of which not the smallest trace is to be found in any genus of the Aphidian group. I fail, therefore, to perceive any analogy between *Pachylomma* and *Aphidius.* Mr. Ashmead is of a different opinion; he expresses himself much struck by the similarity of these two genera,* without however particularising the points of resemblance, which would perhaps be more difficult than to point out their differences. Wesmael has indeed attempted the former task, but with very indifferent success.

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* See Proc. Ent. Soc. Washington, 1894, vol. iii. no. 1, "Notes on Pachylommatoidæ." According to the description of *Eupachylomma rileyi*, it appears that that insect scarcely differs from *Pachylomma.* The writer of this interesting memoir has done well in correcting the original mistake of assigning his *Eupachylomma* to the tribe *Euphoridæ* and genus *Wesmaëlia*, Först., which is quite out of the question. I may remark also that, in speaking of the mode of insertion of the abdomen of *Pachylomma*, Mr. Ashmead quotes, as an example of the same peculiarity, *Cænocœlius*, Hal., which is quite correct; but he is mistaken in supposing that my genus *Promachus*

The characters of this division are comprised in those of the single genus *Pachylomma.*

PACHYLOMMA, De Brebisson.

Paxylomma, De Breb., Enc. Méth., x, p. 23 (1825). Variously spelt by authors *Paxillomma, Paxylomma, Paxylloma*; first corrected by Förster.

Head large, transverse, wider than the thorax; eyes and ocelli very large; face narrow, somewhat concave; clypeus carinated, porrected above the mandibles in form of a rostrum; palpi short, the maxillary with 4, the labial with three joints. Antennæ ♂ ♀ 13-jointed, filiform, shorter than the body in the ♀, nearly as long as the body in the ♂. Thorax very short and gibbous; prothorax concealed above; mesonotum without visible furrows; a shallow fovea before the scutellum; metathorax very short, excavated at the insertion of the abdomen, which is situated at an appreciable distance above the hind coxæ; sternum gibbous. Neuration of wings distinct and complete; 2 cubital areolets; radial areolet narrowly triangular, remote from the tip of the wing; stigma narrow, elongate, lanceolate, emitting the radial nervure near its base; 1st abscissa longer than the thickness of the stigma; 2nd very short, often punctiform or nullified (*P. buccata*) or else longer than the first (*P. cremieri*); cubital nervure springing abnormally either from the point of junction of the two abscissæ (*P. buccata*) or from the outer extremity of the 2nd (*P. cremieri*); hence the two cubital areolets either touch at one point, or are separated by an isthmus; no intercubital nervures; 1st cubital areolet confounded with the 1st discoïdal; 2nd discoïdal almost as large as the 1st; anal nervure not interstitial; recurrent nervure considerably rejected; no recurrent nervure in the hind wings. Four anterior legs long and slender; the hind pair very long, their coxæ elongate, the tarsi dilated, flattened, the 1st joint as long as, or longer than, the others united. Abdomen much longer than the head and thorax, falciform,

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was a synonym of *Cænocœlius.* In fact the name *Promachus* was never published, for I found it to be preoccupied, and substituted another word *Dolops. Dolops* is widely different from *Cænocœlius*, see Tr. Ent. Soc. Lond. 1889, p. 206. The orthography of this last name should be as here written, and not *Cenocælius*, which is mere gibberish.

viewed sideways clavate; 1st segment very narrow, cylindric, with the tubercles nearly in the middle; 2nd one half longer than the 1st, narrow, subcylindric; the following segments shorter, narrow on the dorsum, widened and compressed laterally. Terebra in repose not exceeding the tip of the abdomen; when exserted, it is as long as the 3 or 4 apical segments, slightly curved upwards, acute, with the valves flattened, spathulate. The ♂ is known by its longer antennæ, by the somewhat prominent sheath of the sexual organ, and a lateral emargination of the 3rd segment, more strongly marked than in the ♀.

The singularity of the neuration is explained by the displacement of the cubital nervure, which instead of starting from the præbrachial transverse (as in other Hymenoptera) originates at the flexure of the radial, causing thereby some derangement of the rest of the system. Giraud describes the head as "petite," by an evident lapsus calami; it is on the contrary remarkably large. Förster has made a separate genus *Eurypterna* for the second European species *P. cremieri*, De Romand; it is founded on the different length, in the two species, of the isthmus connecting the cubital areolets; other differences there are none. Fallén's genus *Hybrizon*, published in 1813, ought to take precedence of *Pachylomma*, if it were adequately described; but the definition is so loose that, as remarked by Nees, it includes a number of other insects, and even the whole tribe of Aphidians. Curtis was the first to notice in Great Britain the species about to be described; he established in 1833 the genus *Plancus* for its reception.

Pachylomma buccata, De Brebisson.

Paxylomma buccata, De Breb., *loc. cit.*
Hybrizon latebricola, Nees, Mon., i, 28, ♀.
Plancus apicalis, Curt., Ent. Mag., i, Charactt. of undescr. Gen. and Spp. etc. ♀.
P. buccata, Ratz., Ichn. d. Först., ii. 53, pl. ii, fig. 23 (wing); Wesm., Nouv. Mém. Ac. Brux. 1835, p. 90, ♀, pl. ii, (wing); Marsh., Species des Hym. d'Eur. et d'Alg. Bracon., vol. ii. p. 623, ♂ ♀, pl. xix, fig. 8; Giraud, Verh. d. zool.-bot. Vereins in Wien. 1857, p. 11.

♀ Black, or piceous in various degrees; base of antennæ, abdominal sutures, and legs, testaceous. Head black; clypeus, palpi, and mandibles, testaceous. Antennæ one fourth shorter than the body; joints 1–2 equal, testaceous, the 2nd rounded; 3rd very long, cylindric, blackish like all the following. Mesonotum sometimes rufescent; a fulvous spot is sometimes visible beneath the wings; metathorax carinated on its posterior half, the carina bifurcate anteriorly, showing a tendency to areation. Wings subhyaline or slightly infumated; squamulæ and radicles fulvous; stigma and neuration fuscous; cubital nervure springing from the point of junction of the two cubital areolets, which point represents the 2nd abscissa. Legs, including the coxæ, testaceous; the hind pair somewhat more highly coloured, or fulvous. Abdomen more or less broadly cinctured with testaceous along the sutures, sometimes almost wholly testaceous, blackish at the extremity; 1st segment linear, faintly striolate, forming about $\frac{1}{6}$ of the abdomen; 2nd similarly striolate at the base, widened posteriorly; 3rd and following short, compressed, the 3rd emarginate on either side. Terebra usually concealed or hardly exserted; its valves black. ♂ Similar; antennæ hardly shorter than the body, broadly testaceous at the base, thence to the apex dull fulvous (in my specimen); abdomen longer than that of the ♀, and less claviform. Length, $1\frac{1}{4}$–2; exp. 2–$3\frac{1}{5}$ lines.

Generally distributed throughout Europe, wherever the ubiquitous ants of the genus *Myrmica* are established. I have met with it in the Jura mountains, at Ajaccio, and three times in England, chiefly at Freshwater Bay, Pembrokeshire, where the ♀ s were lurking in great abundance among the rushes on the sand-hills, in company with *Myrmica scabrinodis*, Nyl. I have never had the chance of observing the manœuvres of the species in activity, vaulting over the nests of the ant, and pouncing down upon the workers in order to deposit an egg in each of them. Such are the habits of the larger and much handsomer species *Cremieri*, observed by Dr. Giraud (*loc. cit.*), from whom I extract the following passage:—“Dans une excursion que je fis, le 6 juillet, dans les environs de Vienne, mon attention se porta sur un tronçon de saule en partie vermoulu, sur lequel se promenait une société de très petites fourmis dont je regrette de n'avoir pas déterminé l'espèce. Au dessus d'elles planait un nombre assez considérable de petits hyménoptères; j'en mis une quinzaine dans un flacon, et je les apportai vivants chez moi. Après m'être assuré que j'avais affaire à la *P. buccata*, je les plaçai dans une boîte vitrée qui me permettait d'observer leurs mouvements : le lendemain, vers dix heures, je vis à ma grande satisfaction, que leur réclusion ne mettait pas obstacle à leurs ébats amoureux ; une paire était accouplée," *etc.* Ratzeburg conjectured that *P. buccata* was a parasite of the beetle *Throscus dermestoides*, L., a specimen having been taken hovering about that insect, but after the observations of *P. cremieri* which have been made, and which certainly apply equally well to the present closely allied species, proving the connection which exists between *Pachylomma* and *Myrmica*, we are authorised in rejecting all statements to the contrary.

A short supplement of fresh discoveries is required to complete the subject.

EXPLANATION OF PLATE I.

[*See explanation facing the* PLATE.]